

STUDENT PLACEMENT IN ENTRY LEVEL COURSES OF READING,
WRITING, AND MATHEMATICS IN COMMUNITY COLLEGES

By

VICTOR KENNETH ISBELL

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Abstract of Dissertation Presented to the Graduate
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Victor Kenneth Isbell

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The purpose of this research was to determine the validity and appropriateness of test scores for the American College Testing Program (ACT), Scholastic Aptitude Test (SAT), Multiple Assessment Programs and Services (MAPS), and Assessment Skills for Successful Entry and Transfer (ASSET) for entry level placement in courses of reading, writing, and mathematics in community colleges.

A data base was formed and analyzed by matching test scores of Florida students who took one or more of the state approved tests in the fall term, 1986, with subsequent student grades from 7 Florida community colleges for courses taken during the fall 1986 and winter 1987 terms. The perceived validity of the

tests was further evaluated through a survey given to 1495 student participants and their instructors from 7 different community colleges. Perceptions concerning the current policies on entry level placement were also determined by surveying academic administrators and faculty from 22 Florida community colleges. The following questions were addressed:

1. Are the ACT, ASSET, MAPS, and MAPS tests valid for community college use in entry level placement?
2. What are the opinions of students, academic administrators, and college faculty concerning the threshold scores for placement decisions?
3. What are the major factors that are perceived by faculty and administrators and reported in the literature that can enhance the accuracy of placement decisions?

It was concluded that the above tests have limited validity to be used as the single criterion for entry level college placement. It was also concluded that ACT was the most accurate for placement in reading, ACT and SAT were equal for writing, and MAPS was the most accurate for placement in mathematics. Students and their instructors generally agreed that appropriate decisions had been made in course placement, and the majority of faculty and administrators were satisfied

with their college's present testing system.

Faculty and administrators generally wanted higher threshold scores and better methods of evaluation. Those suggested in the literature included previous grades; courses completed in the placement area; and the interest, motivation, and maturity of the student.

CHAPTER I THE PROBLEM AND ITS SIGNIFICANCE

The Changing Role of the Community College

The mission of the community college has been the product of its history and the functions added over the years in response to the changing needs of society. From their original emphasis on transfer education, community college leaders extended their range of services to include career education, remedial/developmental services, continuing education, community services, and student services. Often these services could not be found elsewhere in the community. The willingness and ability to serve a diverse population with diverse educational needs has been an unqualified source of strength and vitality to the community college movement (Vaughan 1984b, p. 26).

Traditional to most community college mission statements have been the following four concepts: community-centeredness, flexibility, comprehensiveness, and access. The principle most at risk in the national movement towards excellence has been the principle of "open access," which has received most of the blame for erosion of academic standards (McCabe, 1982-83).

Community college leaders have faced a peculiar problem

because of open access. They have had to challenge students who were academically prepared to meet the rigorous expectations of college-level work and yet continue to provide the support necessary to help underprepared students to meet similar expectations.

Looking to the future it can be seen that for Americans to remain competitive, efforts must be made to narrow and eliminate the separation between the privileged and the disadvantaged. Already there have been signs that the gap between the prosperous and the poor is widening. Stephen Rose, an economist who studied patterns of social stratification in the United States, reported in 1984 on a new polarizing trend in the distribution of wealth among socio-economic classes. Between 1978 and 1983 approximately 13% of the middle class disappeared. Only one quarter of that 13% rose into the upper-middle class; three-quarters fell into the lower-middle class (cited in Parnell, 1985, p. 30).

The only reliable equalizer of social opportunity has been education. The new business of America, according to people like Peter Drucker and John Naisbitt, will be thinking and employment will be literacy intensive, not labor intensive. Statistics support this prediction. In 1950 only 17% of the population worked in information-related jobs; in 1986 that figure was over 65% (Massie, 1986, p. 23). People who lack intellectual skills will not be able to compete economically in the future, and the

two emerging cultures will be separated into those who can read, write, and think intelligibly and those who cannot. It is a gulf that society cannot afford and should not allow. Thus it becomes crucial that community college leaders properly evaluate students and place them in the appropriate learning environment where their talents can be most fully developed.

Needs of the Student

To a certain extent changing trends in population demographics will shape all activities at community colleges in the next decade. Throughout the industrialized world there has been a trend towards lower fertility, fewer marriages, more divorces, and larger numbers of people living single or childless life styles. These declines and changes in different age groupings have had a significant impact on community college enrollment and on the number of credit hours taken. Younger students have been more likely to enroll full-time while older students have more often enrolled part-time. Socially the only common denominator of trends and countertrends has been diversity. People have become increasingly autonomous in their values and have forged new lifestyles, making independent decisions and experimenting with options never before available. These changes have been reflected in the type of student, faculty, and curriculum at community colleges. In Maryland in 1984, for example,

almost 75% of the students were enrolled part-time, 46% were in transfer programs, and 60% were women. The median age at most community colleges was then over 30, which means that the so-called nontraditional student had already become the traditional student at community colleges (Massie, 1986, p.9). College leaders have had to deal with the rapidly growing number of students over age 65 whose educational needs are real and important.

By 1990, 51% of the work force is expected to be in the 30-45 age group, up from 39% in 1970. The aging of the work force and population shifts have been moving the country rapidly from a period of worker abundance to a period of worker shortage, particularly at the entry level. Wages in entry level positions are expected to increase as unemployment decreases. Because of the shift in the job structure from industry to information, however, workers at the entry level will have to possess an increasingly higher order of skills (Hodgkinson, 1983, p. 14). Lombardi (1978) had predicted that the proportion of entering college students needing remediation of some sort would reach 50% of the total enrollment in the next decade, a figure that may even be low according to Roueche's findings (1982).

Academically these ill-prepared students have been less likely to continue through a standard sequence of courses from term to term (Romoser, 1978). They have poor study habits and lack basic reading, writing, and

computational skills (Kraetsch, 1980). Most have been from the bottom third of their high school class (Campbell, 1981). These students usually have little confidence and many may suffer from low self-esteem. Often these have been minority students whose educational and psychological handicaps have been aggravated by economic, social, and racial factors.

In summary, community college students are older, take fewer full-time course loads, have received a more heterogeneous social experience, and will require a higher level of entry skills for the new information society. Given the changing circumstances envisioned for the coming decade, it is more important than ever for a community college education to continue to be accessible to the underrepresented and the underprepared.

Entry Level Placement

That there has been a need for developmental education to serve students who have been ill-prepared seems obvious. As long as community college leaders maintained an open admissions policy, these classes were the logical place where the skills required for students to succeed should be taught (Cohen & Brawer, 1982). Gleazer (1980) argued that community colleges must evolve into community-based learning centers which will provide the specific literacy training required to prepare students for jobs and fulfilling lives.

Roueche (1981-82) has pointed out, however, that the most common approach in developmental education was to place the deficient student in the appropriate remedial course and quite often to place the student simultaneously into regular college courses requiring the skill being remediated. This has led to faculty unwillingness to grade on performance, to "social promotion," and has contributed to the overall decline in student literacy and the inflation of grades.

Developmental courses in themselves have not been the problem. Evidence exists that developmental courses actually achieved what they set out to achieve (Cohen, 1973; Cohen & Brawer, 1982). The real issue was how the courses fit into a total student program and whether or not the student was correctly assigned to developmental courses. Herrscher (1977), Roueche (1981-82), and others have concluded that entering students must be screened carefully to determine if they possess the necessary skills for collegiate study. Cross (1971) maintained that without proper consideration for the diversity of students, the open door could turn into a "revolving door" wherein students would exit the college unfulfilled.

Validity of the Placement Process

Since 1985 Florida law has required that college personnel administer placement tests to all entering degree-seeking students in order to assign them courses

commensurate with their abilities (Florida Statute 240.117, 1985). Testing has thus been used as a means of placement rather than as a selection device. Since standardized tests have traditionally been used for selection decisions with cut-off scores chosen in the upper ranges of the score data, most validity studies focused on how well the better student would do in future endeavors. The limited research concerning the predictive ability of tests for developmental placement decisions has usually resulted in researchers describing the tests as "inappropriate."

Reap (1979) in a study of the predictive value of different ACT indices for specific subject areas at North Harris Community college, concluded that the ACT was not a successful predictor for specific courses and in particular for courses at the developmental level. Decker, Jody, and Brings (1976) reported that neither ACT nor SAT seemed to discriminate at the lower end of the spectrum where distinctions for remedial courses must be made. Masoner and Essex (1986-87) likewise reported that the Nelson-Denny Reading Test, a widely used test for assessing reading-skill deficiencies, was inappropriate for use with low-achieving community college students.

Until very recently only a few instruments have been written with the special problems of community colleges in mind, or even normed on community college students (Monroe, 1972; Roueche & Snow, 1977; Seibel,

1967). Only limited research has been focused on developmental models which examine the ability of a test score to predict which students were most likely to fail, using threshold scores from the lower portion of the test score range.

Since ethics and value systems typically prevent researchers from randomly assigning students to treatment situations where some would receive less than what was actually thought would be best for them, most placement decisions are made on the basis of "best judgment." Many times adequate research to determine if the judgments made were appropriate is never undertaken. Research which adds to the body of knowledge concerning the validity and appropriateness of placement decisions using standardized test scores would be extremely useful to community college decision makers.

Justification for the Research

The problem of entry level placement was especially critical to community colleges because of the diversity of their clientele. Since little research had been done on strategies appropriate for student placement in developmental courses, and since it was required by Florida law that such placement decisions be made, an unusual research opportunity existed. Test scores could be adequately researched with a sufficiently large sample to assess properly the validity of using tests

for placement decisions in reading, writing, and mathematics.

The Florida Commissioner's Task Force on Entry-Level Tests was organized to determine suitable test threshold scores. It was declared in 1985 that their efforts had been hampered by the lack of data on the performance of students scoring at different levels on the tests. An Inter-Sector Task Force on Placement Tests was then organized and proposed to obtain research which could examine more fully the problem (Parker, 1987). This group contacted the Florida Community Junior College Inter-Institutional Research Council at the University of Florida and requested their help to determine the validity of the placement model. The interest and influence of state officials provided access to large volumes of data needed for credible research. The results of such research could have wide implications and add significantly to the limited body of knowledge available.

Statement of the Problem

The problem of this study was to determine the validity and appropriateness of test scores for the American College Testing Program (ACT), Scholastic Aptitude Test (SAT), Multiple Assessment Programs and Services (MAPS), and Assessment Skills for Successful Entry and Transfer (ASSET) for entry level placement in

courses of reading, writing, and mathematics in community colleges. The following specific questions were answered:

1. Are the ACT, ASSET, MAPS, and MAPS tests valid for community college use in entry level placement?
2. What are the opinions of students, academic administrators, and college faculty concerning the threshold scores for placement decisions?
3. What are the major factors that are perceived by faculty and administrators and reported in the literature that can enhance the accuracy of placement decisions?

Overview of Methodology

To answer the first question it was necessary to select an appropriate sample. Personnel from the Florida Division of Community Colleges provided test scores of all Florida students who took one or more of the state approved tests in the fall term 1986 on magnetic tape. Representatives from 8 Florida community colleges that had adequate computer capability and were thought to be representative of the state in terms of size and placement tests used were asked to provide a grade tape for the fall 1986 and winter 1987 terms. Leaders from 7 of the 8 colleges invited to participate were able to provide the data in the time frame allowed for participation in this study. Social Security numbers on the test data tape from the Division of Community Colleges were matched with

social security numbers on the grade tapes and the matched records were copied into a data base for use in the study.

Question number one was answered by determining reading, writing, and mathematics test score categories defined for those students who received test scores both above and below the state-approved threshold for class placement. These categories were cross-tabulated with the subsequent grade received in the respective class, and this procedure was completed for each of the four state approved tests. Because of the uniform course numbering system in Florida analysis of combined groups of students from different institutions was possible.

Question 2 was answered through a separate student/instructor questionnaire and a separate administrator/faculty questionnaire. Leaders from all 8 colleges selected to participate in the student/instructor research were asked to administer a questionnaire in college level classes of reading, writing, and mathematics. Two different regular college classes from each subject area from each college were surveyed. The questionnaire was also completed by students and faculty from 2 developmental classes in each of the 3 subject areas from each participating college. Students from a total of 12 classes from each of the selected colleges were thus surveyed.

The perceptions and degree of satisfaction with the threshold scores used for college placement decisions as

viewed by academic administrators and faculty were also obtained through a questionnaire. All 28 Florida community colleges were asked to participate in the survey. A state-wide telephone survey of academic officers was also conducted to determine specific perceptions as to the value of state mandated entry level testing and placement compared to not having any testing and placement program or to having an institutionally designed program.

Question 3 was answered from an analysis of responses from the faculty and administrator survey and also from the reported literature. Recommendations as to other factors which may be incorporated with exam scores to make placement decisions more successful was reported.

Assumptions

Because of the large sample size it was assumed that all levels of student preparation were proportionally represented and that test scores, courses surveyed, and grades given were representative of the Florida community college population in general. It was also assumed that the sample selected for the faculty and administrators survey proportionally represented the characteristics of the Florida community college faculty and administrators. If the tests and established thresholds were appropriate, it was assumed that a necessary, but not totally sufficient test of validity would require that the distribution of grades of students with test scores near

the threshold score would differ significantly from those of students with test scores further from the threshold.

Limitations

The data for courses and grades were limited to fall 1986 and winter 1987 semesters. Students who did not have a test score on record, did not take a course in those terms, or who did not complete their course (received a "W" or "I") were not included in the study. The sample was also limited to entering community college students and did not restrict itself only to recent high school graduates entering college. The results were generalizable to other community college populations whose demographics were similar to those used in the research.

Definition of Terms

The following terms have meanings that were defined for the purpose of this study:

1. Academic achievement refers to increased student knowledge, understanding, and intellectual skills, including written and oral communication skills (Lenning, 1977, p.1).
2. The American College Testing Program (ACT) is a nonprofit educational organization based in Iowa City, Iowa, that offers the widely used battery of "ACT" tests for college admissions. Also offered are other services related to college admissions, including ones for

analyzing family financial need in connection with student financial aid and the Proficiency Examination Program (PEP) for earning degree-credit by examination (Hawes & Hawes, 1982 p. 12).

3. The Assessment Skills for Successful Entry and Transfer (ASSET) program is an ACT-developed advising and planning tool designed specifically to serve students entering 2-year institutions. The ASSET program is a guidance-oriented assessment program combining measures of academic skills with educational planning information. The following uses of the ASSET assessment results are suggested: (a) career exploration and planning, (b) academic planning and advising, (c) course selection and placement, and (d) institutional planning (American College Testing Program, 1986, p. 1-2).

4. A basic skills student, high-risk student, or non-traditional student is

one who has not acquired the verbal and mathematical, and full range of cognitive skills required for collegiate-level work. Generally, he (or she) is a student whose grades fall in the bottom half of his high school class, who has not earned a (college preparatory) diploma, and is assigned to a high school which has a poor record for student achievement, or who has been tracked into a general, commercial, or vocational high school program. . . . Such a student will generally rank low on such traditional measures of collegiate admissions as SAT board scores, high school class average standing. (Gordon, 1976, p. 4)

5. Developmental courses are courses offered for the purpose of "development" of skills and attitudes in basic skill areas such as mathematics, reading, and writing.

Sometimes they are referred to as "preparatory" or "basic" and are often confused with remedial which implies a "correction" of deficiencies.

6. Entering students are first-time-in-college, beginning students, or "new students" in the community college.

7. Multiple Assessment Programs and Services (MAPS) is an assessment and placement service for colleges and universities sponsored by the College Board, a nonprofit membership organization that provides tests and other educational services for students, schools, and colleges. The Florida MAPS program consists of four placement tests in English and mathematics. It includes the Reading Comprehension test from the Descriptive Tests of Language Skills (DTLS), the Test of Standard Written English (TSWE), and the Arithmetic Skills test and the Elementary Algebra Skills test from the Descriptive Tests of Mathematics Skills (DTMS) (Educational Testing Service, 1984).

8. Remedial education is education aimed at overcoming academic deficiencies (Cross, 1976, p. 31).

9. Scholastic Aptitude Test (SAT) is a 3-hour, standardized, secure test widely required for college admission, sponsored by the College Board and administered by the Educational Testing Service (ETS); a verbal score and a mathematical score is provided, each reported on the

SAT score scale ranging from a low of 200 through a high of 800 (Hawes & Hawes, 1982, p. 197).

10. Validity (operational) is defined by the following:

Like consistency, validity is a generic term given to a class of closely related ideas, concepts, and procedures. Validity can thus be defined at various levels and in various ways. The flavor of the concept can be conveyed by the types of questions that validity analysis seek to answer . . . (Brown, 1970, p. 97)

In the narrow view, validation consists of checking the test score against some other observation that serves as criterion. . . . One validates, not a test, but an interpretation of data arising from a specified procedure . . . a single instrument is used in many different ways . . . since each application is based on a different interpretation, the evidence that justifies one application may have little relevance to the next. (Cronbach, 1971, p. 443)

It is clear from the classic definitions of validity mentioned above that an operational definition is needed for any validation research. The operational definition must specify the procedure involving the test being validated. Thus, the validation is a function of procedures as well as the test. The operational definition guiding this study was based on the Florida state mandated procedure. In this context, for a test and the testing procedure to be valid it was necessary, but not sufficient, for the distribution of grades of high scoring students to be significantly different from the distribution of grades of low scoring students. For a given placement test and subject area under study, the significant difference would be required in both developmental and regular college classes between both dichotomies of selected score

categories. If the above distributions were significantly different, the accuracy of placement resulting from these tests could still be too low to make decisions on individuals without consideration of other information. In the cases of statistically significant different distributions in both types of classes, the accuracy level necessary for the testing procedure to be valid then becomes a matter of professional judgment.

Organization of the Research

This research is reported in five chapters plus appendices. Chapter II contains a review of appropriate related literature. Chapter III contains a description of the methodology and procedures used to investigate the problem including selection of the sample, data collection, and treatment of the data. The results of the analysis are reported in the fourth chapter. Chapter V contains the summary, conclusions, implications, and recommendations of the findings for administrative practice and for further research. The appendices include the questionnaire used to obtain data from community college students, the instructions for teachers involved in gathering that data, and the questionnaire used to obtain the administrator/faculty input.

CHAPTER II
REVIEW OF LITERATURE

Mandatory Placement and Open Admissions

"Cheshire Puss," [Alice] began, rather timidly,
. . . would you tell me, please, which way I ought to
go from here?"

"That depends a good deal on where you want to get
to," said the Cat.

--Lewis Carroll, Alice in Wonderland

There were many reasons why this was an appropriate time for community college leaders to ask "where do we want to go from here?" The explosive period of student growth of the 1970s appeared to be over, and like other leaders of institutions of higher learning, community college leaders were facing enrollment declines, budget restraints, and severe competition for students and for funding. More profound than economic and enrollment hardships, however, was the array of changes that challenged the traditional mission statement. The influx of nontraditional students requiring special services, the rising number of part-time students who lacked specific academic objectives, the problems of minorities, women, and handicapped students, all mixed with a growing concern for quality, only added to the confusion.

Higher education in America first became available to more than the privileged elite with the creation of land grant colleges by the Morrill Act of 1862. This act gave substance to the concept that each individual, regardless of economic or social status, should have the opportunity to progress educationally as far as interests and abilities might permit (Roueche, 1968). Gleazer (1970) indicated that the belief in extending educational opportunities to all people led to a philosophy of the "open door" that became the hallmark of the community college movement. The community college's "democratic style," positive philosophy, and social promise appealed to the American people and won great popularity and support.

The community college has been described as the only educational institution that could truly be considered an American social invention (Gleazer, 1963). Sometimes called "democracy's college," a philosophy of equal educational opportunity for all was adopted and an ideal of open admissions was advocated (Roueche, Baker, & Brownell, 1971).

Before about 1870 the burden of proof for admission into a college had been on the student. Applicants were responsible for proving to the college by their past performance that they were probably capable of college-level work. The following was Harold Wechsler's (1977)

classic example of the college selection process that Horace Mann experienced:

In the fall of his twentieth year, Mann presented himself for examination before Brown's president, Asa Messer. Messer, says Mann's biographer Jonathan Messerli, 'examined him on the Greek Testament, attempting to be helpful, choosing selections which Mann had most recently reviewed.' This completed, two faculty members joined them and requested Mann to translate selections from Vergil and Cicero. Finally Mann translated an English paragraph into correct Latin prose. After presenting letters attesting to his good moral character, Mann left the room. The young man's impressive performance on the examination and Brown's unusual need for students in the aftermath of the War of 1812 prompted Messer to admit Mann to sophomore standing. (p. 7)

Gradually as additional subjects for admission were required, written entrance examinations were given in more and more colleges. The burden of proof of ability shifted from the applicants to the college with open access policies. Rather than being able to anticipate freshmen with a homogeneous preparation, most community college leaders were then confronted with a heterogeneity of unknown quantities and qualities. Since college administrators were not prepared to assess entering students' past preparation in specific areas, they had to guess about where to place them in first time courses. The only data available that might help were high-school grades. Only at the end of the first term or semester could college grades be analyzed for placement and by then many mistakes might already have been made. Thus

the need for a more formalized testing procedure evolved (Decker et al. 1976).

The unprecedented educational benefits accompanying the G.I. Bill of Rights after World War II further enhanced and expanded the community college movement (Roueche et al., 1971, p.10). Largely due to government financial aid, more students went to college. In 1950 the number of students enrolled in American colleges and universities was nearly 3 million. By 1960 that had increased to almost 4 million, and by 1980 there were upwards of 11 million persons enrolled (Flournoy, 1982, p. 8). In 1985-86, 21 billion dollars of financial assistance continued to aid students in colleges and universities (Hogarth, 1987). Forty-seven percent was for grants, 50% for loans, and 3% for part-time work (College Board Publications, 1986).

In 1984 and 1985 three national reports focused on the need for academic reform in higher education. The writers of all three reports deplored the erosion of academic standards, the decline in student achievement, the disarray in the curriculum, and the confusion about what should be the purposes of higher education. These writers pointed to a failure of the entrepreneurial attitude on the part of college administrators (Bennett, 1984), the marketplace philosophy which turned colleges into businesses where students were viewed as consumers with dollars to spend (Association of American Colleges,

1985), and the impact of funding based on enrollments which fluctuated widely rather than funding based on legitimate student needs (National Institute of Education, 1984). Others saw the crisis in the broader social context of the dislocation created by moving from an industrial to an information society, the decline of shared values, and the growing materialism in the culture as a whole.

A Miami Herald writer ("Japanese Widen," 1982) described a recent study conducted at the University of Ulster, Northern Ireland, which indicated that the intelligence quotient (IQ) scores of Japanese children now averaged 11 points above those of American children. In addition, "at least 10% of the Japanese population has an IQ of 130 or more, while only about 2% of the American population has an IQ of 130 or more" (p. 7A). There is no doubt that leaders of our educational system must help America to remain competitive, not only through proper preparation of future generations but also by providing developmental and subsequent training for those who have already left high school with poor academic skills.

Current financial exigencies might be a catalyst to change the "open admission" environment of the community college system into more of an elitist environment wherein only the prepared are allowed access to the limited resources available. If such a situation

develops, then having validated means for placement and selection will become even more important.

Derek Bok, President of Harvard University, recently suggested that the most effective utilization of federal funds would be to restrict them to students who were most likely to graduate from college, and "that eligibility for Pell Grants be tied to students' scores on college entrance examinations and high school rankings" (cited in Vaughan, 1983, p. 46). What this position failed to take into account was the impact on large segments of our population inadequately prepared to gain employment. As Roger Yarrington (1982) put it, "there is the unhappy vision of a dependent class of persons who, through lack of literate skills, become a dependent drag on those who are literate and thus more productive in a complex world" (p. 4).

The arguments for the importance of a comprehensive community college were strong. In fact, "the open access institution that offers few or no choices is a contradiction in terms" (Vaughan, 1984a, p.44). For many rural citizens the community college may be the only source of postsecondary study that is reasonably available to them. "Rural youth living in disadvantaged rural areas, particularly minority youth . . . value attainment of the same kinds of life goals as other youth in the United States; however, they exist in

settings that will hinder their achievement of these high aspirations" (Kuvlesky & Copp, 1984, p.26).

The "open door" or "open access" policy maintained by community college administrators has performed a vital service in equalizing opportunity. Colleges had usually been constructed within commuting distance of potential students and this has extended accessibility to essentially the total population (Roueche, 1968). Modest fees have removed most financial barriers. Cross (1969) stated, however, that even if all geographical and financial barriers could be eliminated, racial minorities, women, and those from low socioeconomic classes would still be underrepresented. Two-year college students have been more likely than university students to come from the lower two-thirds of the socioeconomic spectrum (Roueche et al., 1971).

In the first volume of the Junior College Journal, William H. Snyder pointed out the value of the policy of open admission by stating that we had provided for the gifted in the university and for the "manually-minded" in vocational schools, but that we had left average students to fend for themselves. He suggested the following:

They (students) need skill in order that they may make a living, but they need sufficient knowledge of the history of the world and the intellectual achievements of mankind to give them the power of orienting themselves to life. They must have both vision and skill, neither of which can be given intensively in

the time allotted to junior college but each of which can be given with sufficient scope to enable students to earn a living and to adjust themselves to the progress of the world.
(cited in Thornton, 1972, p. 37)

To date, college leaders have concentrated on making "new students" over into the image of traditional students. They have devised all kinds of ways to make them eligible to participate in traditional higher education. Remedial courses were designed to remove academic "deficiencies," counseling to remove motivational "deficiencies," and financial aid to remove financial "deficiencies." If the answer to the question "Who should go to college?" was to be "everyone," then educational systems would have to be designed to fit the new student learning needs (Cross, 1971). Boyer and Hechinger (1981) defined the task as follows: "The conclusion is clear. Higher learning must redouble its efforts to meet more effectively the needs of those who have been inadequately served by education in the past" (p. 30). Wattenbarger and Goodwin (1962) emphasized that the community college had to make readily available programs that met a wide spectrum of community needs and that related economically to the total patterns of educational opportunity in the area.

Testing has played a prominent role in the educational reform movement of the 1980s. Test results were used to document problems and make the case that

the nation was "at risk" in the 1983 report by the National Commission on Excellence in Education. More importantly they have become a major, if not the most important, mechanism for reform. According to Chris Piph, for example, "nearly every large educational reform effort of the past few years has either mandated a new form of testing or expanded use of existing testing" (Piph, 1985, p. 19).

A publication of The National Council on Measurement in Education (1980) stated in part,

many educational decisions can be improved by objective and equitable assessments of achievements and characteristics of individuals. Tests can provide such assessments which, in many instances, are more objective and more equitable than other forms of evaluation. The extent to which tests can contribute to sound educational decisions depends on the intrinsic quality of the tests and on proper interpretation and use of test scores. (p. 4)

Robert Linn (1987) suggested that reliance on testing as a mechanism of policy is not really new. Considerable reliance was placed on tests in the minimum competency movement of the 1970s. Tests were a key component in the evaluation requirements of Title I programs. In many school districts it has been a long standing tradition for representatives to release achievement test scores by school building. Nonetheless, there has clearly been an upswing not only in the emphasis on testing, but in the associated sanctions.

Linn, Madaus, and Pedulla (1982) found that "when used in conjunction with other information, test results can contribute to improved educational decisions; when used in isolation or incorrectly, test results can lead to poor and damaging educational decisions" (p. 2).

What may best be described as selective retrenchment has already taken its toll; those functions not well integrated into institutional missions have been pared away. Some non-traditional academic programs have been dropped or reduced. The scarcity of resources has caused a funding decision to be made between quality of and access to higher education. The argument used is that if we cannot provide developmental services for ill-prepared students, we should not admit them to the campus in the first place. The emphasis has become "accountability." The public has decided, whether consciously or unconsciously, that higher education is not an unqualified good investment. Unrestricted free access was a phenomenon that only lasted about 20 years (Parker, 1987). As a social experiment it converted American higher education from an elitist to an open admission system in a very short time.

David Breneman and Susan Nelson (1980) concluded that tension between the community college mission and finance promises to become more pressing in the 1980s as resources for higher education become less plentiful. They asserted that leaders will be forced to choose which

activities are central to the college and which are of lesser importance.

Community college leaders can not solve their problems in the same way as their 4-year counterparts. To raise entrance level standards would betray the commitment to open admissions. While colleges have to strive for excellence, they must not get it confused with elitism. The National Commission on Excellence in Education (1983) defined quality education as "performing on the boundary of individual ability in ways that test and push back personal limits Excellence characterizes a school or college that sets high expectations . . . for all learners, then tries in every way possible to help students reach them" (p. 30). Roueche (1980) spoke of the community college of the future "with its track record in developmental education" as "the college of diversity. It is the institution to which the poor, the disaffected, the hard-core 'losers' will turn for aid in exploring the options that will give them a better chance of survival in an increasingly hostile and complex world" (p. 3). America today needs more, rather than fewer, well-educated individuals. The direction that leaders of the American community college movement will give from here depends a good deal on "where they want to get to".

Developmental Courses for Student Diversity

The population of students attending community colleges has been markedly different from those attending

4-year institutions. Roueche (1980) referred to this population as "diverse". He noted that more and more students with serious learning deficiencies had enrolled in community colleges and were expected to continue to do so. It has been reported that within a typical community college transfer program, the enrollment reading level might range from grade 4 through grade 14 (Lunneborg, 1977). The typical student body has often been drawn from backgrounds characterized by lower social and economic status, lower educational achievement, marginal employment, and limited participation in community affairs. Students from these environments have been disadvantaged to the extent that their culture has not provided them with experiences typical of the students in traditional colleges.

Cross (1976) called these low-ability students "new-students," and operationally defined them as those scoring in the lowest third among national samples of young people on traditional tests of academic ability. These students created a unique situation that often required changes in the established curriculum and instructional techniques (Walsh, 1979, p. 87).

Women have represented over 53% of all credit enrollments and over 40% of all minority students in higher education have been enrolled in community, technical, and junior colleges (Division of community Colleges, 1987). These changes demanded changing delivery

models that responded to unique subpopulations of students, nontraditional time frames for learning, and multiple geographical locations that must be supported by more sophisticated information systems and technology (Lahti, 1979). Administrators from typical city community colleges reported annual student dropout rates of more than 50% (Cohen, 1969). As many as 75% of the lower-achieving students withdrew during their first year (Schenz, 1963). In the typical California junior college, 80% of the entering students enrolled in remedial English, but only 20% later enrolled in regular college English classes (Bossone, 1966). It was seen from a national survey that although 91% of the institutional leaders espoused the concept of the open door, only 55% provided programs appropriate for non-traditional students (Schenz, 1963).

The crucial issue has become deciding who will be denied access to higher education. Rippey and Rueche (1977) proposed that the answer was to deny access to none but rather to stop recruiting non-traditional students. "With enrollment limits, it is likely that the community colleges will begin to ease recruitment of ethnic minorities, poor persons, and other classes of non-traditional college students" (p. 58). They went on to point out the absurdity of providing access to only those who need it least while doors were closed to those who had no other foreseeable options.

In Beyond the Open Door, Patricia Cross (1971) wrote the following:

Fundamentally, these New Students to higher education are swept into college by the rising educational aspirations of the citizenry. For the majority, the motivation for college does not arise from anticipation of interest in learning the things they will be learning in college but from the recognition that education is the way to a better job and a better life than that of their parents. (p. 15)

She further wrote:

For those students who do apply and are accepted, the college should be prepared to allocate adequate resources to provide the necessary instructional and counseling support while the fear-of-failure pattern is replaced with a more positive self confident approach to learning. (p. 25)

Developmental education is the encompassing term for the compensatory education that might be provided by college leaders for students who are not prepared for traditional entry-level college curricula. Words such as developmental, remedial, compensatory, basic, and corrective education are often confused. Lombardi (1978) has defined the following categories of developmental curricula: pretransfer, handicapped, remedial, and adult basic education. His definitions distinguished between remedial (correction of deficiencies) and developmental (development of skills and attitudes). By viewing remedial and basic education as parts of the total developmental education effort, the Lombardi model provided a useful perspective.

The term "developmental education" gained prominence in the early 1970s (Roueche & Wheeler, 1973). It came from Carl Roger's "whole person" approach in psychotherapy (Rogers 1961), wherein it was believed that the "whole person" focus was necessary to provide a significant educational experience. The pervasiveness of the developmental education movement has been documented by Cohen and Brawer (1982) who reported that most of the nation's community and junior colleges had some sort of developmental, preparatory, or remedial program.

The Carnegie Commission on Higher Education (1973) called for more of an open-access system of education in the United States and for programs adjusted to students from a wider variety of backgrounds:

We have suggested special admissions provisions for disadvantaged students where their ability and the special assistance of the college will make possible their meeting, in full, the academic standards of the college within a reasonable period of time, and certainly by graduation. . . . Colleges should also make provision for the cultural interests of more of the members of their increasingly varied student populations. (p. 30)

There has always been a certain portion of the entering students who have been poorly prepared for the college curricula. Rudolph (1977) noted that colonial colleges were beset by this problem in the early part of the 18th century. While recent high school grades have remained constant or increased, scores on national exams such as the Scholastic Aptitude Test (SAT) and American College Test (ACT) have gradually and

consistently declined since the mid-1960's (American College Testing Program, 1981; Roueche, 1980). Broad media attention to these results has resulted in public concern and demand for immediate remedies for what many perceive to be a decline in educational quality throughout the nation.

Serious debate has occurred over whether standardized tests are an appropriate measure of educational quality, whether other measures could better indicate intellectual readiness for academic work and predict college potential, whether tests discriminate against minority students and perpetuate a class system, and whether the test makers are accountable to the public (Educational Research Service, 1981). Wiener (1985) reported that between 60% and 70% of all community college students have had to take remedial courses. The drop-out rate among such students was reported as over half. Wiener called for mandatory placement testing and subsequent assignment into remedial programs when necessary.

T. Edward Hollander, chancellor of higher education in New Jersey, suggested that how state leaders deal with assessment might depend on prevailing attitudes towards access. In his state, he said, "we believe in open access" and want to "take every high-school graduate or adult where he is and educate him to the extent of his potential" (cited in Jacobson, 1987, p. 19). Accordingly,

Mr. Hollander said that the New Jersey requirement for placement testing of all freshmen was meant to "make sure that all the students have adequate remediation" (cited in Jacobson, 1987, p. 19). In order to plan effective future learning experiences, community college personnel must understand both the level of development of groups of students and the level of development of individuals within these groups. This knowledge could assist in planning not only for current students, but also for students who will enter the education system in the future.

Florida's Mandate for Testing

In the 1970s a statewide attack on functional illiteracy among high school graduates began in Florida. A competency testing approach to determine student mastery of basic skills was implemented when key members of the Florida Senate Education Committee became aware that students were being promoted and graduated from high school without minimal reading, writing, and mathematical skills (Fisher, 1978). This movement towards "competency-based education" in the elementary and secondary schools has resulted in many implications and potential consequences for college admissions, curricula, graduation requirements, and student learning (Spady, 1978).

Elementary and secondary assessment expanded with the 1976 Florida Accountability Act and minimum standards were

established for course credits, mastery of basic skills, and satisfactory performance on functional literacy tests. The Florida high school graduation requirements only required a minimum of 3 credits in mathematics, and it was possible to graduate without any high school algebra. Other requirements included 4 credits in English; 3 in science; one in American history; one in world history; and one-half credit each in economics, American Government, practical arts vocational education, performing fine arts, life management skills, and physical education. Nine elective credits were required for a total of 24 academic credits in grades 9 through 12 (Florida Department of Education, 1977; Florida Statute 232.246, 1986). It was possible for a student to meet the minimum requirements and still need significant preparation in order to compete in the more advanced reading, writing, and mathematics classes at the college level.

The Florida Legislature was concerned about the extensive need for developmental programs within the community college system. State leaders had the following alternatives for dealing with low-skilled community college students: (a) refuse admission, (b) admit but do nothing remedial, (c) fund limited developmental courses in basic skills, or (d) fund extensive remediation programs (Ramey, 1981). Attention was called to the deterioration in academic performance over the last 20

years by authors of the 1982 Master Plan for Florida Postsecondary Education (Parker, 1987). A series of recommendations was presented to address the problem. The following were included:

1. Explicit entry-level standards for basic skills need to be established on a statewide basis. The standards should relate to student ability to undertake college work successfully and should be the basis for admission and placement in college-level programs.
2. Entrance to college-level programs should be limited to students who meet the minimum standards.
3. All Florida public community colleges and state universities should require entering students to complete an assessment test to measure the levels of attainment of the identified skills.
4. The State should finance transitional services between K-12 and postsecondary education to help students remedy deficiencies. The services should be offered in the community colleges. Students should successfully complete remedial courses before attempting college-level coursework in the skill areas. All remedial courses should require exit examinations which would demonstrate attainment of the necessary skills. (p. 8)

It was recommended by authors of the plan that by 1990 the responsibility for ensuring pre-college level education reside in the K-12 sector and remedial courses in community colleges should be limited to students with special needs such as older, returning students.

The 1983 Florida Legislature adopted many of the recommendations and in Chapter 83-325, Laws of Florida, created the statutory authority for state mandated testing and placement of entry level students. In Section

240.117(1) and (2) (Florida Statute, 1985), the Florida Board of Education was directed to specify common placement tests and testing procedures to assess the basic computation and communication skills of entry level students and to adopt scores below which a student was determined to need additional preparation.

In March, 1984, the Florida Postsecondary Education Planning Commission adopted a supplement to the master plan. The supplement noted that the current gap between high school diploma standards and college entry-level skills was considerable and experienced by many students. It recommended that a single program entitled College Preparatory Instruction be developed and funded at the community colleges. In July, 1984, the Florida Board of Education adopted Rule 6A-10.315, F.A.C., defining the college preparatory program. In June of 1985 the threshold scores for four tests were adopted by the Commissioner's Task Force on Entry-Level Tests. Students who scored below the thresholds were assigned to college developmental instruction (Parker, 1987).

The 1985 Florida Statute 240.117 (1985) provided the following:

from tests currently in use in community colleges and universities, the State Board of Education shall specify common placement . . . which will assess the basic computation and communication skills of students who intend to enter a degree program at any public community college or state university. . . . [S]tudents who have been identified as requiring additional preparation . . . shall enroll in college

preparatory adult education . . . to develop needed college-entry skills. (p. 423)

The following four tests were approved: (a) the American College Testing Program (ACT), (b) Scholastic Aptitude Test (SAT), (c) Multiple Assessment Programs and Services (MAPS), and (d) Assessment Skills for Successful Entry and Transfer (ASSET). Students who scored within one standard deviation of the cut-off scores might be exempted from or included in college developmental instruction on the basis of supplemental testing or assessment documented by the institution. College leaders that used each test were permitted to use one or a combination of the tests for student placement analysis.

A task force, including representatives from the state universities, the community colleges, the Florida Department of Education, the College Board, and the American College Testing Program, declared that their efforts to determine suitable threshold scores had been hampered by the lack of data on the performance of students scoring at different levels on the tests and the comparability of threshold scores among the four designated tests (Parker, 1987). The task force recommended that the suggested placement scores be used on an interim basis until a research program could provide a more complete data base upon which to recommend revisions or continuation of the current policies. The placement procedures were to be implemented as of fall term 1985.

Students were required to be tested before the completion of registration and had to enroll in developmental communication and computation instruction if the test scores were below those specified. The threshold scores were as follows:

(a) ACT Assessment, American College Testing Program.

Reading	14	Composite Standard Score
Writing	14	English Usage Standard Score
Mathematics	13	Mathematics Usage Standard Score

(b) ASSET, American College Testing Program.

Reading	22	Raw Score
Writing	43	Raw Score
Mathematics	12	Elementary Algebra Raw Score

(c) MAPS, College Entrance Examination Board.

Reading	12	Scaled Score
Writing	30	Test of Standard Written English (Scaled Score)
Mathematics	206	Elementary Algebra Scaled Score

(d) SAT, College Entrance Examination Board.

Reading	340	Verbal Standard Score
Writing	30	Test of Standard Written English (Scaled Score)
Mathematics	400	Mathematics Standard Score

(Florida Statute, 1985, Rule 6A-10.315,
supplement 85-1).

The Florida Commissioner of Education appointed an Inter-Sector Task Force on Placement Tests in the late fall of 1985 to determine the steps necessary to develop further policies on placement testing. The Task Force recognized that placement testing was a relatively recent development in higher education. The importance of distinguishing between admissions selection tests such as

ACT and SAT and placement tests was affirmed. The Task Force held three formal meetings in Tallahassee in February, March, and April of 1986. They concluded that final recommendations on a state policy regarding college-level entry and placement testing should be completed in 1988 (Parker, 1987). It was essential that research be undertaken which could help determine which test would be the most useful for placement purposes and whether the selected cut-off scores were appropriate for reading, writing, and mathematics courses.

Placement Decisions Using Standardized Tests

The purpose of a test standardization process is to yield a measurement containing as little as possible of "irrelevant variance" and bias and to yield fair, objective scores on a common scale that will apply equally to all students who take the test. Ultimately the goal of standardization is to achieve comparability--from student to student and from group to group (Tumin, 1981). This requires that the conditions of measurement be the same and that the effects of extraneous factors be removed. Standardized testing has now come to be regarded in many quarters as an integral and essential instrument of American education. The purpose of testing in community colleges has not been for selection reasons as much as it has been for determining at what level of course work the

entering student should begin. In Issues of the Seventies, Willis E. Dugas (1970) stated the following:

In our design of tests that are intended primarily to sort, a decent respect for the minds of men should make us meticulously careful to avoid not only channeling blacksmiths to scholarship, but, much worse, diverting potential scholars to blacksmithing, because we would thereby foreclose to someone the development and use of his mind, the vocation among all vocations most singularly human. In addition we should search for instruments that might diagnose causes of poor performance and permit corrective prescriptions, so that each man might have available to him the education best suited to his self-fulfillment. (p. 20)

Thornton (1966) stated that the responsibility for the choice in going to college and the resulting success or failure should rest with the student, not with a standardized test or with the decision of an admissions counselor. While the concept of open admissions has been seen as fundamental to the realization of the mission of the community college, Cross (1971) maintained that without proper consideration of the diversity among students the open door could turn into a "revolving door," wherein students left the college unfulfilled. Roueche (1980) further commented that students with learning deficiencies needed properly designed instructional programs, and that college leaders had to divorce themselves from "the students have a right to fail" mind set.

Until very recently only a few instruments have been written with the special problems of the community

colleges in mind, or even normed on community college students (Monroe, 1972; Roueche & Snow, 1977; Seibel, 1967). This deficit has created problems which have led to the use of locally-designed tests in over 50% of the 139 colleges surveyed by Roueche and Snow in 1977 and more than 41% of the 99 colleges surveyed by Rounds (1982-83).

The League of Innovation in the Community College (Kraetsch, 1980) met in Dallas to discuss the art of assessing students for academic success. There was some quasi-agreement about what areas should be assessed: English and math. Beyond that the agreement broke down. Some college leaders assessed for reading, others for music or chemistry. The area most closely agreed upon concerned the parameters of testing. Testing should be quick, easily administered by paraprofessional or clerical staff, and easily scored in order that results are known as soon as possible. No agreement was reached on how assessment results should be used regarding course selection or placement of students in courses.

Henry Walters (1975) conducted a survey of methods being used in 64 California community colleges to identify students for placement in freshman English courses. There was agreement among the respondents that no single multipurpose identification instrument was available which would assist in English placement and also identify student learning deficiencies.

According to Lunneborg (1977), community college personnel typically used tests for the following purposes: (a) to assess the skill level of entering students for placement decisions and (b) assessment to reflect what happens to students after entry. It was this second type of assessment that has received most of the research attention, as it is a measure of what learning has been mastered; the readiness of the student for further education; and to some extent, as viewed by the public, a measure of institutional quality. Monroe (1972) reported that in at least 75% of the community colleges some diagnostic testing of skill in communication and computation was performed.

Reilly (1974) stated that the problem was separating out those students who could profit from higher level instruction. Reilly wrote the following:

This is essentially a placement problem in which two types of error are possible; that is, an error can be made by placing a student either too high or too low. The effectiveness of any placement procedure can be judged by the extent to which it reduces these errors.
(p. 8)

A number of standardized commercial testing programs have been available. A survey among 489 public colleges of the Southern Regional Education Board was made to determine the cut-off scores for placing students into regular versus developmental courses. Results indicated that almost 100 combinations of over 70 different tests were used to place students. Both

locally-developed and standardized tests were used. Thirty-one different reading tests were reported. There were 30 different writing tests and in mathematics, 118 college leaders administered an in-house test and an additional 36 testing instruments were named.

An examination of the cut-off scores used by the different college administrators indicated a wide range of standards. On a reading test the percentage of students eligible for college-level placement ranged from 57% to 99%, and on a mathematics test, from 6% to 86% (Abraham, 1986). Lunneborg (1977) stated that "local characteristics should have a major influence on the development of any student assessment system. A description of the learning goals, instructional resources, and uniqueness of the student clientele will all interact to shape a testing program as it matures" (p. 28).

Experience has shown that relatively few general abilities are basic to a wide range of expected academic performances. Thus, tests of verbal and mathematical ability have been used to predict average grades in college, and the addition of other more specialized tests often have not much improved predictions (Sanford, 1965). There appears to be a widely held belief that test scores accurately represented achievement, as emphasized by recent requirements for employees and students to pass literacy or competency exams. If it is assumed that test

scores can be valid predictors of success, then the important question becomes whether the selected threshold scores are established at the appropriate level.

Writers of numerous studies have examined specific standardized tests such as the SAT and ACT and their correlation with grades. The results have been inconclusive. Schade (1977) compared first semester grade point average (GPA) and two standardized tests. Schade used the ACT and the Missouri College Placement Test (MCPT). It could be seen that each of the ACT segments was significantly correlated with GPA, with the mathematics segment having the lowest squared correlation (.125). Schade described the predictive power of the tests as "poor to moderate" and indicated that the values of the correlation coefficients were comparable to results reported from a variety of institutions. None of the MCPT segments showed a significant correlation.

McLeod (1985) analyzed the relationship between tests used for placement purposes and subsequent grades in mathematics courses. It was reported that correlations for ACT and SAT scores and grades in initial mathematics courses were generally low, and it was concluded that using standardized test scores as a sole measure of placement evaluation was inappropriate.

A correlation study using ACT subtest scores and grades earned in corresponding subject areas was also done by Nolan (1976). The correlations were so low

that it was concluded that there was no significant relationship between ACT scores and academic performance. Nolan stated that "it appears that high school grades alone are the best predictors considering the negligible amount of variance accounted for by ACT scores" (p. 4).

Groenke (1969) compared the ACT scores of 959 freshmen at Mesa Community College in Arizona with their college success as indicated by GPA. Groenke found ACT scores to be significantly more predictive for freshmen under the age of 21 than over, with a significantly higher correlation between the ACT scores and college GPA of recent high school graduates who had completed an academic high school program than for those who had completed a nonacademic program.

High school grades and entrance scores were compared by Price and Kim (1976). They concluded that it appeared reasonable to believe that ACT scores were more significant and important in predicting a person's ability to perform in college than were high school grades alone.

Baird (1969) looked at a sample of 1,638 men and 1,079 women completing their second year at 17 two-year colleges. He found that high school achievement indicators, which were only moderately successful, were still better predictors of college success than was the ACT exam.

Researchers at Lake Land Community College in Illinois examined whether the ACT or scores on the required reading and mathematics subtests of the ACT were effective predictors of college GPA. Results showed that neither of these subtests was a good predictor of GPA for the group studied (Lach, 1971).

Although the SAT has been used more years than the ACT and is more firmly established in 4-year colleges, it has been less commonly used in community colleges.

Roueche and Snow (1977) studied 139 community colleges and found that nationwide only 18.7% used the SAT as compared with 37.4% who used ACT. Rounds (1983) found the SAT slightly less used than the ACT (27.3% for the SAT versus 29.3% for the ACT) in 99 California community colleges.

Users of the SAT reported similar results to those produced by ACT studies. Chissom and Lanier (1975) found that high school GPA was the most valid predictor of college grades for 669 freshmen, followed by the SAT mathematics scores and then the SAT-verbal. Jackson (1981) compared the predictive validity of SAT with the high school GPA for freshman admissions at Temple University and found the traditional combination of SAT plus high school GPA to be the best predictor for the regular admissions students.

Aleamoni and Obler (1978) and Passons (1967) compared the predictive results of SAT with those of ACT. It was found that high school grades were the best

predictors, but the measure could be enhanced somewhat by adding either the ACT or SAT. When Halpin, Halpin, and Schaer (1981) compared the relative effectiveness of the ACT, the SAT, and the CAT (California Achievement Test), as well as high school GPA in predicting college GPA, they failed to find any significant difference in the predictive ability of any of the three tests. Adding GPA to any of the three tests resulted in increased predictive efficiency of about 18.5% for each test.

A strong challenge to the claim made by SAT authors that it is a useful predictor of college grades was made by Slack and Porter (1980) when they concluded, after looking at the data, that the SAT added only about .06 to the percent of variance explained by the high school record as a predictor.

Larson and Scontrino (1976) examined the validity of high school grade point average and the verbal and mathematical portions of the SAT as predictors of college performance over an 8-year period. They reported consistently high multiple-correlation coefficients. Interestingly however, the mean proportion of variance accounted for in GPA was increased by only 4.7% when test scores were used in addition to high school GPA.

Fincher (1974) examined SAT scores over a 13-year period and noted that the value of SAT scores was their use in conjunction with high school grades. The SAT scores alone did not correlate significantly with

college performance. Used with the high school record, SAT was judged to improve predictive efficiency. It was also noted that the mathematics scale contributed with less consistency than the verbal section of the test. Each portion of the test taken separately was a better predictor than the combined score, and females were found to be more predictable in performance than males when predicting college grades from SAT and high school grades.

A 1986 report to the California Postsecondary Education Commission summarized the findings about standardized tests used for higher education admission and placement in California. SAT scores, taken alone, were only a fair to moderate predictor of freshman GPA averages in half the colleges, although in one-tenth of the colleges a combined verbal/mathematics score yielded a validity coefficient of .57. The students' high school GPA average alone was a somewhat more valid predictor, but a better predictor was the SAT score combined with high school record (California Postsecondary Education, 1986, p. 13).

Rounds and Anderson (1985) concluded after compiling a summary of research on three major standardized tests that research on the effectiveness was inconclusive if one sought the very best instrument. For every one who argued for the validity of a specific instrument there were others who questioned it. One

generalization seemed consistent. The ACT and SAT appeared to be more usefully predictive with traditional students than with special admissions or high-risk students--the very clientele with whom community college leaders must deal. There is a large body of evidence that the single best predictor might be the high school grade point average. Roueche and Archer (1979), however, are among those who have questioned the use of student records such as GPA because "they can be influenced by grade inflation and social promotion" (p.16).

The necessity of finding some reliable means to aid the placement decision has been widely recognized. Since students at most community colleges are only required to possess high school diploma or its equivalent for admission, students may not be properly prepared for college level work. Barshis and Guskey (1983) have reported the following:

far too many institutions are trying to find that all-purpose testing instrument which will yield an accurate measure of students' verbal and quantitative skills in one stroke. Care instead should be given to creating flexible programs into which students are placed based upon specific assessment directed toward the objectives of the specific program. And the student should always have the option of being able to withdraw from the program if he or she has been wrongly placed. (p. 89)

Community college leaders in search of useful placement techniques other than standardized tests have often included other factors in their assessment models

and have obtained conflicting results. Haase and Caffrey (1983) reported information concerning the assessment and placement process using the Stanford Test of Academic Skills (TASK) in addition to an institutionally developed technique. An increase in retention of students was reported as a result of the placement program. They advised that continuous monitoring was necessary to be able to respond to needed changes. They recommended that methods beyond mere testing be used and that program directors strive to maintain maximum flexibility.

Cordrey (1984) examined the effectiveness of a skills prerequisite program used at a community college. The program included mandatory placement testing with prescribed remedial courses as a result of the placement. Results indicated that withdrawal from courses was reduced as a result of the placement program. It was concluded that remediation did have a positive effect on future success in academic courses. Haney (1980) reported that remediation was not effective and that placement testing would, therefore, not be necessary. Hills (1971) cited research that indicated that evaluation of remedial courses was not effective. Popham (1975), however, reported that competence testing was useful because it allowed isolation and remediation of deficiencies. The assumption was often made in the literature that remediation is both possible and effective.

Willingham and Breland (1982, p. 176) concluded that the validity of the SAT in predicting freshman grades was comparable to recent compilations of validity studies ($r=.53$). Despite variations from college to college, the overall validity was about equal to, and corresponded quite closely with, their relative weight in selection decisions. Adding 23 personal qualities to the SAT did not result in a practical improvement in prediction of the freshman grade averages. Even the colleges' overall academic rating, based on all information in each applicant's folder, was typically not as good a predictor as was the SAT.

Wood (1980) noted that the assumption that algebra should be the first course in mathematics for an entering student was unwarranted. Since many students entering open-door colleges have studied very little or no mathematics, Wood concluded that (a) a majority of freshmen had deficiencies in mathematics, (b) records showed that these deficiencies did not necessarily imply a lack of ability, (c) for students of normal or above-normal ability these deficiencies could be removed by a review course, (d) students with serious deficiencies had no way to improve without such review courses, (e) placement tests for well-prepared students provided an efficient way to achieve accurate student placement, and (f) any school that supported the open door philosophy had

to accept responsibility for providing courses in which students had a reasonable chance to succeed (p. 64).

Forced enrollment in college level developmental courses based on standardized test scores is likely to increase the amount of time a student spends at college and therefore the amount of money. Incorrect placement may lead to frustration and lower personal self-esteem. Those who are forced to take developmental courses, however, may do better in subsequent courses than students who are just above the cut-off score and who immediately enter the more advanced course. This lack of preparation may diminish the probability of successfully passing both the initial and subsequent courses. Correct placement is therefore vital to the continued success of the student. Incorrect choice of threshold scores has a profound effect on both those designated to take developmental courses and those who are allowed to continue into more advanced classes.

Supplemental Tools for Placement Decisions

Several authors who have written in the literature have expressed concern with using grades for objective measurement purposes since grades were often determined subjectively. Haase and Caffrey (1983) stated that grades were not good measures of performance because of grade inflation and lack of standardization. Most researchers attempting to validate standardized tests

compared test scores to GPA. Goldman and Slaughter (1976) questioned the use of grades as a validation criterion and maintained that composite GPA was a poorer predictor than a single class grade.

McClelland (1973) questioned the validity of grades as predictors, stating that while grades and test scores correlated highly with one another, neither could be used to predict accurately future measures of life.

Researchers have had difficulty demonstrating that grades are related to any other behaviors of importance other than doing well on aptitude tests. McClelland stated further that while grade level attained seemed related to future success, performance within grade level was related only slightly. It was further urged that a wide array of talents be assessed for college entrance purposes.

Instead of asking what abilities and personality factors are associated with future high grades, we might ask what the attainment of high grades contributes to the development of personality. Academic grades are not the only criterion of a student's success in college. If we were to describe a developed personality we might estimate some of its characteristics such as breadth of view, capacity for independent thinking, and existence of deep interests. High grades might be to some extent indicative of high levels of development, but the relationship could not be expected to be anywhere near one to one. Thus where development is the objective we should not think of

a student's success solely in terms of ability to pass courses with high grades.

One of the main difficulties in predictive validation is the problem of the criterion or the outcome to be predicted. An average grade index is a convenient criterion because it is a commonly developed index and because one does not have to wait long to obtain it. Breland (1981) found that the best predictor of academic outcomes was previous grades. Of 45 predictors described as "good," 26 were previous grades and 10 were tests of some type.

Grades have been subject to criticism, but their use has been practically universal. Standardized test scores have also been subject to criticism for many of the same reasons as grades. Alternative means of assessment have been reported in the literature but there seems to be no agreement on what measures should be used as alternatives. Oral exams, performance tests, situational tests, observations, and checklists have been suggested as complements and alternatives (Roueche, 1980). Roueche also maintained that no single method of evaluation would fit all students. Some students are right-hemisphere preferenced, that is, they excell at holistic and spatial functions. Traditional methods of instruction and evaluation have been designed around the verbal and analytical left-hemisphere strengths of the middle class.

Lunneborg (1977) suggested that there were various kinds of information that should be gathered at the time students enter college. Their prior educational record including coursework taken and grades received should be the first information collected. Gathered next should be achievement tests and assessment of both general and specific aptitudes. Measurement should include nonintellective or noncognitive personal characteristics as well. It was reported that only about one-third of the very high community college student attrition could be explained on "intellective" grounds (Monroe, 1972). These personal characteristics should not be overlooked.

Cross (1972) pointed out that the lack of self-confidence was so great that fewer than one-third of community college students were confident of their ability to handle coursework. Caughren (1973) studied motivation of community college students and emphasized the importance of constructing tests which assess creativity, persistence, interests, values, attitudes, and manual and artistic skills. It was indicated that these nonintellective, personal characteristics have relevance not only in the choice of a vocational goal, but also in the degree of success the student might expect in the particular chosen venture.

Manning, Willingham, and Breland (1977) reported a summary of selective admissions considerations. The following was concluded:

1. Tests and grades together were more predictive of subsequent academic performance than either alone.
2. Grades were less helpful than they once were because of grade inflation.
3. Grades and test scores were useful, but were usually not sufficient as a sole basis for action. (p. 135)

Test scores were best at determining at one end those applicants who were likely to distinguish themselves academically and at the other end those most likely to fail. They were not suited for fine tuning in between, e.g., a 525 score is not clearly better than a 500 score. Torsten Husen (1967) noted that "extensive empirical research tells us that at most half of individual differences in educational attainments are attributable to purely intellectual factors. The rest may be attributed to motivation, interest, perseverance, health, and of course, home background" (p. 413). Some of these factors have proven most difficult to assess prior to admission and course assignment. Others affect earlier grades and entrance test scores and are therefore reflected in the placement and admissions decision.

Mitter (1979) did research in the Netherlands and compared a general (written) intelligence test, a mathematical aptitude test, scores on a questionnaire on study habits and motivation, and secondary school grade point averages on mathematics and science. The conclusion was that GPAs had substantial validity and predictive

tests did poorly. It was further noted that the best predictors of academic performance were the results of past study; predictive tests had higher validities to the extent to which they resembled achievement tests, and aptitude tests and intelligence tests followed as predictors in that sequence.

There was a particular lack of research on the use of standardized tests to measure the "potential for failure" using scores that usually fall into the middle or low end of the test score data. Reap (1979) analyzed the American College Testing (ACT) assessment program in terms of its ability to provide an accurate description of the entering freshmen and to be an effective predictor of student success. It was concluded that the test did describe the entering freshmen, but that it was not an effective predictor of success. Since in this case the ACT was being used for placement rather than selection purposes, Reap determined correlations of math grades and ACT scores as .19. When the high school grade averages were included the effectiveness of prediction was increased. While it appeared that the effectiveness of ACT in predicting grades increased as scores increased, Reap concluded that the ACT was not a successful predictor in the lower range of the data.

Decker et al. (1976) reported that neither ACT nor SAT seemed to discriminate at the lower end of the spectrum where a test needed to make distinctions for

remedial course placement. As a result they chose to develop their own tests tailored to their student body and curriculum. The tests used at Hunter College included objective tests for reading, written English, and mathematics--plus an essay and a second-language test for reading placements.

Masoner and Essex (1986-87) reported that the Nelson-Denny Reading Test was a most highly-favored but an often misused testing instrument for assessing reading-skill deficiencies of community college students. They reported that officials were using the test in 46% of the nation's colleges. They stated the following:

It is inappropriate for assessing the overall reading-skill deficiencies of low-achieving community college students. . . . It is excellent for identifying highly-skilled readers. . . . Problems arise when reading educators administer the Nelson-Denny Reading Test to diagnose specific reading needs of low-achieving students, to diagnose specific reading skill deficiencies. . . . These misuses result when reading educators adapt the test to their particular need. (p. 26)

The procedures used to place students in developmental courses at a community college was studied by Linthicum (1980). Administrators used grades, nationally normed tests, and institutionally developed tests to assess levels of skills that could help in subsequent placement decisions. Linthicum concluded that student choice was not an effective method of placement and that a mandatory placement program was essential for

student success. Placement based solely on test scores was not effective either. Qualitative factors such as motivation and self-concept were suggested as important in the learning process. Reading tests were reported to be better predictors of academic success than were math tests, and Linthicum recommended that math courses not be taken during the first term by low ability students.

Cunningham (1983) evaluated the appropriate English placement criteria for Embry-Riddle freshmen and correlated 13 variables. Statistically significant correlations were obtained between some paired variables, but "standardized tests and the high school averages predict final grades in freshman English better than University prepared measures of writing skills" (p. 13).

Kenison (1986) developed a prediction model to place freshmen in mathematics courses. Multiple regression analysis was used to determine the best predictors of success for each group. High school grade point and the mathematics portion of the SAT were the better predictors of math.

Clark (1980) attempted to determine whether placement scores, high school grade point average, prior college experience, prior college grades, or prior high school or college grades would be significantly related to student success in math classes. Only grades in high school and college math courses were significantly related to success (defined as grade "C" or better).

Summary

Entering community college students were reported by Spence (1977) as older, more career-oriented, often part-time, sometimes handicapped, more heterogeneous in their social experiences, and in need of higher levels of skills to compete in the job market. The Carnegie Commission on Higher Education observed in 1973 that changes in young people, jobs, and life-styles justified modifications in the structure of postsecondary education to provide more options and shorten the duration of formal education (Greenberg, O'Donnell, & Burgquist, 1980). They argued that there was considerable redundancy in high school and college and that the 8-years spent with these curricula could be reduced by at least one quarter without sacrificing educational quality.

A review of the research literature found numerous authors that reported placement as a continuing problem for community college leaders whose mission it is to serve this diverse clientele of new students. While many sources in the literature called for effective placement, the means of achieving such results have been elusive. Most methods used by administrators used standardized testing instruments which were often used in conjunction with other criteria. It has been demonstrated that standardized tests have only limited predictive value when scores from the lower portion of the score range were the

focus of analysis. Other factors were apparently involved which have been difficult to detect.

Valid means of assigning students to courses commensurate with their skill were elusive. Even the use of grades was questioned when trying to determine if they really were indicative of future success in life. Alternative means of assessment were often proposed, but the use of traditional grades and standardized tests have persisted as the most widely used placement techniques. One can not predict reasonably by simply applying the "best" predictors. Academic performance is the outcome of a complex and dynamic system which seems to defy manipulation as long as we do not have a realistic and comprehensive theory of the process.

Most researchers who have considered the relationship between standardized tests and grades have examined the predictive validity of the tests for use as selection tools. Since mandatory testing for placement was relatively new in community colleges, information in the literature was limited. Most authorities have used a similar rationale and have emphasized the need for proper placement, but an agreed-upon system has not yet been devised.

The importance of correct placement of students into developmental classes by Florida's community colleges was recognized from the viewpoint of creating an environment where a reasonable probability of success existed for the

student. The placement criteria used at the time of this study were state mandated tests, the choice of which and the cut-off scores of which were both in question.

Research was needed to determine if tests were valid for use in assigning entering students to either college developmental or regular college level courses in reading, writing, and mathematics.

CHAPTER III METHODS AND PROCEDURES

Information Needs

The Florida Legislature created the statutory authority for state-mandated testing and placement of entry-level college students. In 1985 the Florida Board of Education was directed to specify common placement tests and testing procedures to assess the basic computation and communication skills of entry-level students and to adopt scores below which a student was determined to need additional preparation. Students were required to take one of four tests before the completion of registration and were required to enroll in developmental classes if the test scores were below those specified.

The Florida Commissioner of Education appointed an Inter-Sector Task Force on Placement Tests in the fall of 1985. The Task Force met and concluded that essential research should be undertaken to help determine which test was the most useful for placement purposes and whether the selected threshold scores were appropriate for reading, writing, and mathematics courses.

The problem of this study was to determine the validity and appropriateness of test scores for entry

level placement in community colleges. The test scores were from one or more of the following: The American College Testing Program (ACT), Scholastic Aptitude Test (SAT), Multiple Assessment Programs and Services (MAPS), or Assessment Skills for Successful Entry and Transfer (ASSET).

Research Design

Question one was concerned with the relationship between future academic success and the test scores of students placed in college level courses and students placed in developmental level courses in the areas of reading, writing, and mathematics. Data were provided by the Division of Community Colleges on computer tape which provided the test scores of all Florida students who took one or more of the state approved tests in the fall term 1986. Administrators from eight Florida community colleges were then asked to provide a grade tape for the fall 1986 and winter 1987 terms. Those colleges included in the sample were selected by representatives from the community colleges involved, Florida Department of Education personnel, and the Inter-Institutional Research Council. Those selecting the college sample had in-depth knowledge of the desired criteria and were able to select colleges that were representative of the overall college system in Florida. The criteria included the size of the college, the ability to produce machine processable data, and the geographic location.

Social security numbers on the test data tapes were matched with social security numbers on the grade tapes. Records with matched numbers were copied into a data set to track student grades for two terms subsequent to their placement in either college level or developmental level courses.

The reading, writing, and mathematics test scores for individual students were cross-tabulated with the student's subsequent grade received in the respective class. Student scores were placed into various test score categories, both above and below the state approved threshold, and the number of students receiving a particular grade within each category of scores was determined. This procedure was completed for each of the four state approved tests.

The preferred procedure for addressing question one would have been to study the performance of a group of students in courses where the entire distribution of scores was represented. This procedure was not possible in this research because the mandate to use certain scores for placement was already in full implementation.

As an alternative to the preferred procedure, performances of students whose test scores were at or below the threshold for placement in college level courses were dichotomized into a high score group with scores near the threshold and a low score group with scores less than those of the high score group. Similarly, students who

scored at or above the threshold were dichotomized into a low score group near but above the threshold and a high score group further above in the score distribution.

If the tests and established thresholds were appropriate, a necessary but not sufficient test of validity would require that the distribution of grades of students with test scores near the threshold score should differ significantly from those of students with test scores further from the threshold. Because of the large sample size involved it was assumed that all levels of student preparation were proportionally represented and that test scores and grades received were representative of the community college population in general. Students who received grades of "W" (withdrawal) or "I" (incomplete) were not included in the study.

The data were limited to fall 1986 and winter 1987 semesters. The sample was also limited to entering community college students and was not limited only to recent high school graduates entering college. The results were generalizable to other community college populations whose class demographics were similar to those used in the research.

The statistical tools used to measure the relationship between two research variables usually requires that the variables be identified as categorical or continuous, and if causality is implied then one variable has to be treated as the independent variable and

the other as the dependent variable. Since both test scores and grades can be described as categorical, the appropriate statistical measure for analysis is cross-tabulation.

Cross-tabulation has been by far the most common measure of association between survey variables and it has been used much more frequently than all other techniques combined (Alreck & Settle, 1985). Cross-tabulation or simply "cross-tabs" does not require that one variable be identified as dependent and the other as independent, although that is often the case when cross-tabs are used. The object of cross-tabs was to determine if grade distributions of high score groups differed significantly from low score groups on each placement test. If the two distributions were not different, then the row percentages in each row would be nearly the same as the percentages at the bottom of the table and the column percentages in each cell would be nearly equal to the percentages at the far right.

It was also of interest to determine which of the approved tests was the best predictor for entry level placement based on academic success. This was determined by analyzing which of the four approved tests provided the fewest "wrong classifications." The placement error was operationally determined by adding the percentage of students in the college level courses who received F grades plus the percentage of students in developmental

courses who received A grades. These groups of students had the highest probability of having been placed incorrectly.

Since a researcher can very often achieve a statistically significant relationship (although not necessarily practical relationship) simply by increasing the size of the "N" or sample size, and since the sample of the population to be surveyed was so large, almost any statistical technique could result in statistical significance. It was therefore appropriate to further research the perceived validity of the threshold scores as viewed by students, faculty, and administrators.

To answer question 2 a separate questionnaire was administered to determine student and instructor perceptions as to the degree of satisfaction with placement decisions. The instrument was developed and approved through a panel of experts including Dr. John Nickens, Dr. Tom Delaino, and Dr. James Wattenbarger from the University of Florida and Paul Parker from the Florida Board of Community Colleges.

Faculty from all 8 colleges selected to participate were asked to administer a student questionnaire in 2 regular college and 2 developmental college classes for each of the 3 subject areas--reading, writing, and mathematics. A total of 12 classes from each of the selected colleges were thus to be surveyed. Classes

taught by part-time instructors were excluded from the survey.

Students were asked to provide demographic information about themselves in 15 areas. While cross comparisons were not made between various demographic characteristics of the students and their test scores or grades, the information was essential in order to define the population and to be able to generalize the results to other groups of students with similar demographic characteristics.

Instructors of the classes surveyed were also asked to evaluate the appropriateness of the placement decision for the student respondents in their class. They were asked to indicate with a prescribed number on a class roster whether the student should have been placed in a lower level class, whether the placement was appropriate, or whether the student should have been placed in a more difficult course. Instructors were asked to base their assessment on quizzes, homework, classwork, discussions, and other feedback from the student. They were told specifically that placement test scores should not be considered in their assessment.

Instructors were informed at the beginning of the course that an evaluation on the appropriateness of entry level placement would be sought after about 6 weeks of instruction. Whether an instructor who was asked to

participate and allow class time for the students to participate did so or not was a voluntary decision made by the instructor. Selection of courses included in the sample was stratified so that data about students placed into developmental and regular courses by each of the four state approved tests were collected.

A separate survey of academic administrators and college faculty was made to determine the perceptions and satisfactions of the threshold scores used for placement decisions. The same panel of experts that designed the student/instructor instrument designed the survey instrument for faculty and administrators. Distribution took place through the Division of Community Colleges and completed surveys were returned to the University of Florida for analysis.

Administrators and faculty from all 28 Florida community colleges were asked to participate in the survey. Administrators surveyed included the chief academic officer and the directors or chairpersons of English, mathematics, reading, and college preparatory classes. Faculty surveyed included individuals who taught college developmental and beginning college level courses in reading, writing, and mathematics. Leaders in each college were also given the right to include all of their involved administration and faculty as described above, or only a representative sample.

Question 3 was answered from an analysis of the literature and from the administrator/faculty survey. To more completely answer the question, a separate state-wide telephone survey of academic administrators was conducted to determine specific perceptions as to the value of state mandated entry level testing compared to not having any testing program or to having an institutionally designed program. Recommendations as to other factors that might be incorporated with exam scores to make placement decisions more successful are reported.

Description of Placement Tests

The four tests used in this research were the American College Testing Program (ACT), the Scholastic Aptitude Test (SAT), the Multiple Assessment Programs and Services (MAPS), and the Assessment Skills for Successful Entry and Transfer (ASSET). These tests were designed for predictive purposes and have been commonly used as selection instruments at the high end of their score range, but little research has been done on their validity and predictive value for placement decisions using a lower segment of the score data.

Aiken (1985), in Mitchell's Ninth Mental Measurements Yearbook, explained that the ACT examination is composed of three major parts including (a) the Academic Tests, (b) the Student Profile Section, and (c) the ACT Interest Inventory. Although the Academic Tests of the ACT were

used for college admissions purposes, the company emphasized using the tests and other parts of the program in counseling and guidance.

ACT differed from the SAT in a number of ways. SAT was more popular in the East and Far West, whereas ACT was given more frequently in the Midwest. Although total testing time was approximately the same, the SAT exam was composed of two parts and a composite score was not usually reported. Authors of the ACT exam also emphasized reading and other linguistic skills more than mathematics, which constituted only one of the four tests. In general both ACT and SAT are instruments which assessed knowledge and skills acquired in and out of school over a period of time. Results obtained through correlational studies of the ACT and grades have been inconclusive.

The SAT exam has been challenged as to its vendors claim that it is a useful predictor of college grades by Fincher (1974), Larson and Scontrino (1976), and Slack and Porter (1980). Slack and Porter concluded that the SAT added only about .06 validity to the high school record as a predictor.

The ASSET test battery was comprised of two levels. One level was designed to assess basic skills while the second level was intended to assess more advanced skills. Both levels were used to measure skills in mathematics and language usage. Only the basic skills level included a reading assessment. The ASSET program was designed in

1982 by ACT to match a set of student retention and transfer objectives identified by the Los Angeles Community College District. Authors of the ASSET Technical Manual (American College Testing Program, 1986) suggested that ASSET was to be used as a guidance-oriented assessment program and was most useful for career exploration and planning and advising.

The Florida MAPS was designed by the College Board and included the Reading Comprehension test from the Descriptive Tests of Language Skills (DTLS), the Test of Standard Written English (TSWE), and the Arithmetic Skills test and the Elementary Algebra Skills test from the Descriptive Tests of Mathematics Skills (DTMS). Each of the tests was designed to provide information about students' readiness for an entry-level course. The Florida MAPS Technical Manual (Educational Testing Service, 1984) stated the following: "It should be understood that these test scores reflect past opportunities to learn and the scores should not be used as the sole criterion in a placement decision. In no case should they be used for admissions" (p. 5).

The Key Issue--Validity

Validity refers to the extent to which the scores of a test were useful for their intended purpose. Several types of evidence could be used to evaluate their effectiveness for this purpose.

One type of evidence for validity was the judgment of college instructors and students that the placement tests accurately placed students in the appropriate class. Additionally, evidence was obtained from the perceptions of faculty and administrators responsible for overseeing the placement process. Ideally this type of evaluation should have been made at each separate community college.

Another type of evidence for the validity of a placement test was its effectiveness as a predictor of students' success in courses requiring as prerequisites the skills the test was intended to measure. Criterion-related validity refers to the relationship between the test scores received and the criterion (grades) believed to measure directly the behavior or characteristic in question. The extent that scores on the aptitude test were related to success in college, as measured by grades, was the extent that the test had criterion-related validity for the purpose of predicting grades (Ary, Jacobs, & Razavich, 1979).

Of primary interest in this research was what the tests could predict about success or lack of success in college level courses and college developmental courses rather than in the test content. There were several characteristics that a criterion measure should possess. Of these the most important was relevance. The major purpose was to determine whether the criterion (grades)

was accurately reflected by the attribute under study (test scores). If not it would be meaningless to use test scores as the major determinant affecting placement decisions.

If administrators, faculty, and students perceived the placement decisions to be appropriate, regardless of the criterion-related validity, then suggesting alternative means of student assessment that could be combined with exam scores to enhance placement decisions becomes important. Recommendations concerning the degree of reliance on test scores versus the amount of flexibility that educators must retain in making student placement decisions could become key aspects of the conclusions and recommendations of this study.

CHAPTER IV RESULTS AND DISCUSSION

The following questions were addressed by this study:

1. Are the ACT, ASSET, MAPS, and SAT tests valid for community college use in entry level placement?
2. What are the opinions of students, academic administrators, and college faculty concerning the threshold scores for placement decisions?
3. What are the major factors that are perceived by faculty and administrators and reported in the literature that can enhance the accuracy of placement decisions?

Results Relative to Research Question One

The basis for addressing question one was the comparison of grade distributions of students who scored high on their placement test with grade distributions of students who scored low on the same test and in the same type course, college level or college developmental. The distributions were tested for statistical significance with chi-square and the .05 probability level was used.

The premise was that to achieve validity in the placement procedure, it was necessary, but not sufficient, for the grade distributions of high score student groups

to differ significantly from grade distributions of low score groups in both developmental and regular college classes for any given test. Specifically, the percent of A and B grades should be higher for the group of students with higher test scores and the percent of F grades should be higher for the group of students with lower test scores. Even if the distributions were significantly different, the accuracy of placement resulting from these tests could still be too low to make decisions on individuals without consideration of other information. In cases where the exam meets the operational definition of statistical validity, the practical implications of using the test score attained by a given student for class placement becomes a judgment decision to be made by the faculty member and the student. While a statistically valid score should provide a good indication as to initial academic ability, use of the test score alone may lead to decisions which ignore other considerations which can affect the actual performance level of the student.

ACT Exam

Reading. Grades attained by students in college level reading courses were compared with their ACT reading subtest scores. The results are presented in Table 1. It should be noted that too few students were enrolled with scores above the threshold on the ACT to be meaningfully analyzed.

Most students in college level reading courses had scores below the threshold score of 14 and were qualified to take the college level course because of completion of college preparatory reading. Therefore, students included in both intervals for college level reading performance had scored below the state approved threshold in reading, and had completed the developmental course.

The ACT test scores were significantly related to the grades awarded in the college level reading subtest (significant difference between two categories of score ranges and grades received). It could be observed that the group with scores of 9-11 received 33% of the A and 30% of the B grades while the group with scores of 12-14 received 40% and 48%, respectively.

Table 1

Results of Using ACT Reading Subtest for Placement in College Level Reading Courses

ACT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
9-11	10	33	9	30	8	27	1	3	2	7	30
12-14	14	40	17	48	3	9	0	0	1	3	35

Chi-Square = 6.046, D.F. = 2, Prob. = .049.
 Cs, Ds, and Fs combined into one column for test of significance. Threshold score: 14.

A comparison of grades attained by students in college developmental reading courses with ACT reading subtest scores is presented in Table 2. The sample was of

Table 2

Results of Using ACT Reading Subtest for Placement in
College Developmental Reading Courses

ACT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
6-9	45	13	51	15	51	15	108	31	88	26	343
10-13	95	21	128	28	87	19	56	12	96	20	462

Chi-Square = 60.948, D.F. = 4, Prob. = .000.
Threshold score: 14.

sufficient size that it was not necessary to combine columns for analysis, and the resulting chi-square statistic of 60.948 was significant at the .05 level.

It could be observed that 21% of the 10-13 score group earned A grades while only 13% of the 6-9 score group earned A grades. Similarly the higher scoring group earned almost twice the percentage of B grades as did the lower scoring group. However, percentages earning F grades differed only by 6, 20% and 26%, respectively. This result was consistant with literature that suggest that these tests discriminate more poorly as score distributions approach the lower end of the tests' ranges. Because both distributions (college level and developmental) did meet the research definition for validity (statistical significance), it was concluded that professional judgment should be applied to determine if the accuracy of placement is sufficient for the procedure to be valid for use in Florida colleges.

Writing. The results of comparing grades attained by students in college level writing courses with their ACT writing subtest scores are presented in Table 3. It can be observed from this table that the percentages of A and B grades were higher for the 17-19 score group than for the 14-16 group. Furthermore, 19% of the 17-19 score group earned D and F grades compared to 34% for the 14-16 score group.

Table 3

Results of Using ACT Writing Subtest for Placement in College Level Writing Courses

ACT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
14-16	3	2	30	17	83	47	9	5	50	29	175
17-19	11	6	64	36	74	39	10	7	26	12	185

Chi-Square = 24.758, D.F. = 4, Prob. = .000.

Threshold score: 14.

Although the distributions were significantly different at the .05 level, moving the threshold score higher than 14 would reduce the number of failures by preventing some underprepared students from being in the regular level class, but it would also result in many students unnecessarily taking the preparatory course as 66% had earned grades of C or higher.

The results of comparing ACT writing subtest scores with grades earned in developmental writing courses are

shown in Table 4. The distributions of the score groups were significantly different at the .05 level as would be expected for the large sample size. The difference was maximum for B and D grades earned. The 10-13 score group earned 26% B grades compared to 12% for the lower 6-9 score group. The 6-9 score group earned 20% D grades compared to only 7% for the higher scoring group.

Table 4

Results of Using ACT Writing Subtest for Placement in College Developmental Writing Courses

ACT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
6-9	11	3	44	12	124	34	75	20	114	31	368
10-13	23	5	125	26	183	38	32	7	122	25	485

Chi-Square = 56.972, D.F. = 4. Prob. = .000.
Threshold score: 14.

It should be noted that 32% of the 10-13 score group and 51% of the 6-9 score group earned D and F grades. Thus it would be inappropriate to move the threshold downward placing more of these student into more difficult courses. Again, since statistical significance is noted between the categories of scores for both developmental and regular college classes, the professional opinion of educators must be sought to evaluate the practical significance of the findings before making a final conclusion about the validity of the threshold score.

Mathematics. Comparisons of grades attained by students in college level and in developmental mathematics courses with ACT mathematics subtest scores are presented in Table 5 and Table 6, respectively. The distributions of low scores and high scores did not differ significantly in either developmental or college level courses. Thus, the use of this test for entry level placement in mathematics did not meet the criterion of validity.

Table 5

Results of Using ACT Mathematics Subtest for Placement in College Level Mathematics Courses

Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
14-16	16	26	16	26	16	26	4	7	9	15	61
17-19	10	20	10	20	20	40	3	6	7	14	50

Chi-Square = 2.820, D.F. = 3, Prob. = .420.
 Ds and Fs combined into one column for analysis
 Threshold score: 14.

Table 6

Results of Using ACT Mathematics Subtest for Placement in College Developmental Mathematics Courses

ACT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
7-10	14	13	32	30	24	23	7	7	28	27	105
11-13	12	13	29	30	29	30	5	5	21	22	96

Chi-Square = 1.707, D.F. = 4, Prob. = .790.
 Threshold score: 14.

SAT Exam

Comparisons of grades attained by students in college level courses and college developmental courses with SAT by subtest score levels for reading, writing, and mathematics are presented in Tables 7 through 12. In only one instance were there too few cases for a statistical comparison of distributions to be computed.

Reading. The comparison of grades in college level reading with SAT subtest score levels is presented in Table 7. It can be observed that only 25 students were enrolled in this course. Among these, 12 of the students had been so placed because they had completed the developmental reading course as their scores were less than the 340 threshold needed for qualification.

Table 7

Results of Using SAT Reading Subtest for Placement in College Level Reading Courses

SAT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
300-330	2	17	6	50	4	33	0	0	0	0	12
340-400	5	39	6	46	0	0	2	15	0	0	13

Insufficient N in some cells for valid chi-square analysis. Threshold score: 340.

Grades earned in developmental reading courses were compared to SAT reading subtest scores and the results are shown in Table 8. It can be observed that distributions of the two score groups differed significantly at the .05

level. The percentage of the high scoring group who earned F grades was 14 while the percentage of the low score group who earned F grades was 23. However, with the exception of the percentages of A grades, the two distributions appeared to be relatively similar with the low score group actually having a higher percentage of B and C grades (higher percentage would be expected in high score group).

Table 8

Results of Using SAT Reading Subtest for Placement in College Developmental Reading Courses

SAT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
220-270	4	4	43	37	27	24	14	12	27	23	115
280-340	27	18	52	35	29	20	20	13	21	14	149

Chi-Square = 15.679, D.F. = 4, Prob. = .003. Threshold score: 340.

It is possible that many of these students could have successfully completed the college level reading course although it appeared from the enrollment data that few, if any, would elect to take college level reading. Perhaps a more reasonable approach to placement in courses of this nature would be to require a college level course for students who scored below the threshold. Students who had difficulty during the course could be given developmental status and graded on lower standards.

Writing. SAT writing subtest scores and grades earned in college level writing courses are presented in Table 9. The distributions of low and high score groups were significantly different at the .05 level. Such differences were apparent throughout the range of grades with the high score group attaining more A and B grades than the low score group. As expected, the low score group was characterized by higher percentages of C, D, and F grades than was the high score group. However, from these two distributions one would expect that raising the threshold score would affect whole distributions rather than just the low grades. For example, if the threshold were set at 37 and if the resulting grade distribution remained the same as above for that score group, then the percentage of F grades would have fallen by 5% (13% to 8%), but 87% of the students would have been denied the opportunity to enroll in a college level course they otherwise would have passed.

Table 9

Results of Using SAT Writing Subtest for Placement in College Level Writing Courses

SAT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
30-36	14	9	40	26	71	45	11	7	21	13	157
37-42	37	14	93	35	104	39	11	4	23	8	268

Chi-Square = 9.461, D.F. = 4, Prob. = .05. Threshold score: 30.

SAT writing subtest scores were compared to grades earned in developmental writing courses. The results are shown in Table 10. The distribution of the low score group differed significantly from the high score group at the .05 level. Professional judgment is further required to determine the practical validity of the data. It can be observed that the percentage of F grades was within one percentage point for the two groups and the low score group had almost twice the percentage of A grades as did the high score group. This is evidence that the low end of the test distribution does not predict grades as accurately as other parts. The large sample number probably accounted for the significance of the difference in the distributions which was most noticeable in the B and D grades. These results diminished the credibility of using this test as a sole basis for placement in writing courses.

Table 10

Results of Using SAT Writing Subtest for Placement in College Developmental Writing Courses

SAT Level	As		Bs		Cs		Ds		Fs		% Total
	N	%	N	%	N	%	N	%	N	%	
19-23	8	7	18	15	56	46	18	15	21	17	121
25-27	4	4	34	31	46	42	6	5	20	18	110

Chi-Square = 12.766, D.F. = 4, Prob. = .013. Threshold score: 30.

Mathematics. The results of comparing SAT mathematics subtest scores for grades attained in college level mathematics courses are presented in Table 11. The difference between the high score distribution and the low score distribution was not significant at the .05 level. Furthermore, the percentage of F grades differed by only one, and the percentage of A grades differed by only four. Clearly, raising the threshold score by as much as 60

Table 11

Results of Using SAT Mathematics Subtest for Placement in College Level Mathematics Courses

SAT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
400-450	11	19	15	25	18	31	5	8	10	17	59
460-510	11	23	11	23	11	23	7	15	8	16	48

Chi-Square = 1.748, D.F. = 4, Prob. = .782. Threshold score: 400.

Table 12

Results of Using SAT Mathematics Subtest for Placement in College Developmental Mathematics Courses

SAT Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
260-320	4	21	5	26	5	26	2	11	3	16	19
330-400	7	10	21	29	17	23	5	7	23	31	73

Chi-Square = .203, D.F. = 1, Prob. = .652 with continuity correction.
As and Bs combined and compared to Cs, Ds, and Fs together.
Threshold score: 400.

points would not change the grade distribution since there was no significant difference between the low and high distributions.

If students were placed poorly by the score on the SAT mathematics subtest in college level work, then the college developmental placement was worse. One can see from Table 12 that not only was the difference between low and high score groups not significant, but the low score group actually had a higher percentage of A grades than the high score group and a lower percentage of F grades. Clearly, using the SAT mathematics subtest for placement is not appropriate.

ASSET Exam

Reading. Results of using the ASSET reading subtest for placement in college level reading courses are shown in Table 13. The fact that few students elected to enroll in college level reading was also evident from this table. It can be seen that 24 of the 58 students in this course had completed the developmental courses as their test scores were lower than required for initial admission, and the difference between the grade distributions was not significant.

Results of using the ASSET reading subtest to place students in college developmental classes are shown in Table 14. The distribution of grades of the high score group had more As and Bs than the distribution of the low

Table 13

Results of Using ASSET Reading Subtest for Placement in College Level Reading Courses

ASSET Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
13-21	8	33	7	29	3	13	2	8	4	17	24
22-34	19	56	8	24	3	9	0	0	4	11	34

Chi-Square = 3.168, D.F. = 2, Prob. = .205.

Cs, Ds, and Fs combined into one column for analysis.

Threshold score: 22.

score group. Also, the low score group had more F grades than the high score group and the difference between the two groups was significant at the .05 level. This result was evidence of validity for placement in developmental reading. However, 57% of the high scoring students earned A and B grades. These students could have possibly succeeded in the college level reading course.

Table 14

Results of Using ASSET Reading Subtest for Placement in College Developmental Reading Courses

ASSET Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
9-15	6	5	27	21	54	43	21	17	18	14	126
17-22	36	20	66	37	55	31	16	9	6	3	179

Chi-Square = 36.356, D.F. = 4, Prob. = .000.

Threshold score: 22.

Writing. The results of placing students in college level writing courses based on the ASSET writing subtest are shown in Table 15. As indicated in this table, the distribution of grades of the high score group differed significantly from the low score group at the .05 level. The most striking differences were the percentages of A grades and F grades. The differences were 37% and 19% As, and 9% and 14% Fs, respectively, for the high and low score groups.

Should the threshold score be raised from 43 to 52, then a distribution similar to the distribution shown in Table 15 for the high score group would be expected. The significance would be a decrease in F grades from 14% to 9%. However, 86% of the low score group who successfully completed the college level course would not receive college credit for their success. The value judgment to be made is whether or not it is preferable to deny credit for 86% or accept the extra 5% failure rate.

Table 15

Results of Using ASSET Writing Subtest for Placement in College Level Writing Courses

ASSET Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
43-51	180	19	297	31	289	31	51	5	134	14	951
52-60	168	37	134	30	87	19	21	5	44	9	454

Chi-Square = 60.327, D.F. = 4, Prob. = .000
Threshold score: 43.

A comparison of grades of students placed in college developmental courses based on their ASSET writing subtest score is presented in Table 16. The distribution shown for the low score group was not significantly different from that of the high score group. It can be observed that the high score group actually received a higher percentage of F grades and a lower percentage of A grades than did the low score group. Since the results from both the regular college classes and developmental college classes were not significant, the quantitative analysis fails to meet the definition of validity which would be necessary to use the test for placement purposes.

Table 16

Results of Using ASSET Writing Subtest for Placement in College Preparatory Writing Courses

ASSET Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
24-32	16	16	28	28	43	42	12	12	2	2	101
34-43	31	12	75	30	101	40	25	10	20	8	252

Chi-Square = 5.260, D.F. = 4, Prob. = .262. Threshold score: 43.

An explanation of the significant relationship between ASSET and grades for the students who scored at or above the threshold of 43 and the lack of significance of the relationship for students who scored below the threshold was the inability of ASSET to discriminate accurately in

the low score area of the distribution. This phenomenon was expected from the literature review.

Mathematics. The results of using ASSET mathematics subtest for placement in college level mathematics courses is shown in Table 17. The grade distributions shown in this table differed significantly at the .05 level. However, there were some anomalies. First, both the low score group and the high score group had more A grades, and more, or as many, B grades as C grades. Second, the low score group had more F grades (27%) than any other grade, although there were 24% A grades.

Table 17

Results of Using ASSET Mathematics Subtest for Placement in College Level Mathematics Courses

ASSET Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
13-15	54	24	44	19	43	19	25	11	60	27	226
16-18	44	34	34	27	26	20	13	10	12	9	129

Chi-Square = 17.049, D.F. = 4, Prob. = .002.
Threshold score: 12.

It would appear that the relationship between scores and grades in the low score group was low compared to the relationship within the high score group. Possibly the discrimination of the test becomes low in the 13-15 score range. This was supported by the data shown in Table 18 where there was no significant difference between grade distributions for score categories 5-8 and 9-12.

Again, it appears that an admission test designed to discriminate optimally between high scoring students was used inappropriately as a placement test where discrimination at the lower end of the range was needed.

Table 18

Results of Using ASSET Mathematics Subtest for Placement in College Developmental Mathematics Courses

ASSET Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
5-8	10	35	10	35	5	17	1	3	3	10	29
9-12	19	37	20	39	8	16	3	6	1	2	51

Chi-Square = .546, D.F. = 2, Prob. = .761.

Cs, Ds, and Fs combined into one column for analysis.

Threshold score: 12.

MAPS Exam

Writing. The results of comparing grades to the MAPS writing subtest are shown in Table 19 for students in college level writing courses. One can see that the grade distributions for the high score group and the low score group were significantly different at the .05 level. However, the number was large and even a very small difference would be statistically significant. Also, the percentage of F grades was lower for the low score group. This provides little support for using the MAPS subtest as a single placement criterion in reading.

The results of using MAPS writing subtest for placement in college developmental writing courses are

presented in Table 20. It can be seen that the distributions of grades for the high score group and the low score group did not differ significantly.

Table 19

Results of Using MAPS Writing Subtest for Placement in College Level Writing Courses

MAPS Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
30-36	79	6	374	30	536	43	164	13	100	8	1253
37-42	140	8	513	31	671	40	165	10	183	11	1672

Chi-Square = 18.579, D.F. = 4, Prob. = .001.
Threshold score: 30.

Table 20

Results of Using MAPS Writing Subtest for Placement in College Developmental Writing Courses

MAPS Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
19-23	1	1	15	18	44	52	10	12	14	17	84
25-27	5	7	21	30	26	36	10	14	9	13	71

Chi-Square = 7.056, D.F. = 3, Prob. = .070.
As and Bs combined into one column for analysis.
Threshold score: 30.

Mathematics. Comparisons between grades earned and MAPS mathematics subtest placement scores are presented in Tables 21 and 22. It can be seen that a significant difference in grades distributions existed between the high score group and the low score group for students who

scored at or above the threshold score and were in regular college level courses. There were insufficient students who scored below the threshold score and were in college developmental courses for valid chi-square analysis.

Table 21

Results of Using MAPS Mathematics Subtest for Placement in College Level Mathematics Courses

MAPS Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
206-211	69	8	179	20	241	27	149	17	254	28	892
212-217	122	17	196	27	219	29	97	13	100	14	734

Chi-Square = 79.917, D.F. = 4, Prob. = .000.
Threshold score: 206.

Table 22

Results of Using MAPS Mathematics Subtest for Placement in College Developmental Mathematics Courses

MAPS Level	As		Bs		Cs		Ds		Fs		Total
	N	%	N	%	N	%	N	%	N	%	
201-203	8	12	17	27	6	9	7	11	26	41	64
204-206	5	46	4	36	0	0	0	0	2	18	11

Insufficient N in 204-206 score level for valid Chi-Square analysis. Threshold score: 206.

Summary of Test Score/Grade Analysis

Grade distributions and test scores were compared and the results presented in Tables 1 through 22. These comparisons were used as a basis for answering question one. Two general patterns were evident from an

examination of these tables. The first was that there was a significance difference between the grade distributions of students in low score groups and students in high score groups for 7 of the 11 tests analyzed for college level courses. The second pattern was characterized by fewer cases (5 of 11) where there were significant differences in the grade distributions of high score groups and low score groups of students placed in developmental courses. Only three exams, the ACT reading, ACT writing, and SAT writing met the operational definition of statistical significance by having achieved significance in both the developmental and regular college level classes.

In the college level courses the percentage of A grades was generally higher for students with higher test scores, and the percentage of F grades was generally higher for students with lower test scores on all four state approved exams. Many students with low test scores, however, earned A grades and many students with high test scores earned F grades. Thus, there is little evidence to indicate that moving the threshold score up or down would automatically improve the accuracy of placement in any of the four tests. It would certainly change the distribution of grades, but changing the threshold score up would probably reduce by a small percentage the number of students who would not receive failing grades from regular courses, but many more students would be required

to take developmental courses that would have normally passed the regular college classes had they been allowed to attend. This finding was consistent with the literature that suggested the need to design specific tests for placement purposes and to give consideration to other indicators in the placement process. The flexibility many instructors were given to use other criteria to aid in placement decisions may have compensated somewhat for the lack of precision inherent in the Florida state approved tests.

Based on the evidence it was concluded that a majority of the placement tests currently in use are not statistically valid for placement decisions and those that did achieve statistical validity should not be used as the sole determinant for placement decisions. The reason for this caution is that even the tests with significance misplaced some students some of the time.

Comparative Validity of the Tests

It was of interest to determine which of the 4 tests was most accurate for entry level placement. Comparisons of the relative placement accuracy of each of these tests are presented in Table 23. The basis for the definition of placement error used in this table was the percentage of students in the college level courses who received F grades plus the percentage of students in developmental courses who received A grades. The rationale for this

definition was that students who received F grades in college level courses had a highest probability of being placed above their preparation and ability level than students who passed the course. The students who earned A grades in the college developmental courses also had the highest probability of succeeding in the college level courses had they been placed there. While it was recognized that error was inherent in using such a definition broadly, in this instance the error should be distributed proportionally across the tests that were evaluated, and the evaluation was not biased. Obviously, should the threshold scores for placement be changed, the results would probably differ.

It can be observed that the overall error of placement was 10%. Also, there were only small deviations of the total percentages of error between the 4 tests from from the overall percentage. The lowest error rate was ACT and the highest was ASSET, with 9% and 12% respectively. The percentages of error were much larger for placement areas, even within tests. For example, ACT was lowest in reading (8%), ACT and SAT tied for lowest in writing (9%), and MAPS was the lowest (12%) in mathematics. The percentage of error was highest in mathematics for all of the tests with ASSET having the highest of all (23%). It was concluded that the tests were similar in their overall accuracy. However, ACT was

Table 23

Comparison of Errors in Entry Level Placements by State Approved Tests.

Test	Placement Errors				Total Errors	Total Placed	
	N	%	N	%			
SAT Reading	31	11	0	0	31	11	289
SAT Writing	12	2	44	7	56	9	655
SAT Mathematics	11	6	22	11	33	17	200
SAT Total	54	5	66	6	120	10	1144
ASSET Reading	42	12	28	8	70	19	363
ASSET Writing	47	3	187	11	134	13	1758
ASSET Mathematics	29	7	72	17	101	23	435
ASSET Total	118	5	287	11	305	12	2556
MAPS Reading	6	0	283	10	289	10	2933
MAPS Writing	-	-	-	-	-	-	-
MAPS Mathematics	13	1	191	11	204	12	1701
MAPS Total	19	0	474	10	491	11	4634
ACT Reading	34	4	24	4	68	8	880
ACT Writing	34	3	76	6	110	9	1213
ACT Mathematics	26	8	16	5	42	13	312
ACT Total	94	4	116	5	210	9	2405
All Tests	286	27	943	88	1116	10	10739

best for reading, ACT and SAT were equal for writing, and MAPS was best for mathematics.

Results Relative to Research Question Two

Student/Instructor Survey

Students in college developmental and entry level college courses in reading, writing, and mathematics were surveyed with the questionnaire presented in Appendix A.

Instructors were also asked to evaluate the appropriateness of the placement decisions for the same population of students. Teacher instructions that accompanied the student questionnaires are found in Appendix B. Cross-tabulations of responses between student opinions and faculty opinions of the placement decisions in writing courses are presented in Tables 24 and 25.

Writing. Placement in developmental courses in writing was deemed appropriate by 69 students and their instructors likewise reported that the placement for 66 of those same 69 students was appropriate. In 5 cases the students felt their placement was too high, even though they were assigned to a developmental course, but the instructor rated the assignment as appropriate. Two students felt their placement was too low while the instructor rated it appropriate, and in 3 cases the instructor rated the placement too low while the student thought it was appropriate. Of 76 total responses, 66 or 86.8% of both the students and instructors felt that placement in the developmental writing course was appropriate.

For the college level course in writing (Table 25) there was also major agreement between student and instructor perceptions of correct placement, with 74 of the 86 total cases (86.0%) having placements reported as

Table 24

Student and Faculty Opinions of Student Placement in College Developmental Writing Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>						<u>Total</u>	<u>N</u>	<u>%</u>
	<u>Too High</u>	<u>N</u>	<u>High</u>	<u>N</u>	<u>Appropriate</u>	<u>N</u>	<u>Too Low</u>	<u>N</u>	<u>%</u>
<hr/>									
Placement Too High	0	0	0	0	0	0	0	0	100
Placement Appropriate	5	7	66	90	2	3	73	100	
Placement Too Low	0	0	3	100	0	0	3	100	
Total	5	7	69	91	2	2	76	100	

appropriate. One student felt that placement was too high and the instructor felt it was too low, 5 students felt their placement appropriate while the instructor felt it was too low, and 6 students reported the classes were too

Table 25

Student and Faculty Opinions of Student Placement in College Level Writing Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>						<u>Total</u>	<u>N</u>	<u>%</u>
	<u>Too High</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>Appropriate</u>	<u>N</u>	<u>Too Low</u>	<u>N</u>	<u>%</u>
<hr/>									
Placement Too High	0	0	0	0	0	0	0	0	100
Placement Appropriate	0	0	74	92	6	8	80	100	
Placement Too Low	1	17	5	83	0	0	6	100	
Total	1	1	79	92	6	7	86	100	

low or too easy although the instructors rated the placement as appropriate.

Reading. Cross tabulations of student and instructor responses for placement in reading courses are presented in Tables 26 and 27. In college developmental reading, 52 students and their instructors out of 72 total responses rated the placement as appropriate (72.2%). Three students rated their placement as too high and 2 rated their placement as too low, while the instructors rated it appropriate. Four developmental reading students considered their placement appropriate and 2 felt it was too high even for developmental classes, while the instructors felt it was too high. Two other students felt their placement too low and 7 students rated their placement as appropriate while the instructors rated these

Table 26

Student and Faculty Opinions of Student Placement in College Developmental Reading Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>							
	Too High		Appropriate		Too Low		Total	
	N	%	N	%	N	%	N	%
<u>Placement</u>								
Too High	2	33	4	67	0	0	6	100
<u>Placement</u>								
Appropriate	3	5	52	91	2	4	57	100
<u>Placement</u>								
Too Low	0	0	7	78	2	22	9	100
Total	5	7	63	87	4	6	72	100

Table 27

Student and Faculty Opinions of Student Placement in College Level Reading Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>							
	Too High		Appropriate		Too Low		Total	
	N	%	N	%	N	%	N	%
<u>Placement</u>								
Too High	0	0	4	100	0	0	4	100
Placement Appropriate	3	4	54	86	6	10	63	100
Placement Too Low	0	0	5	100	0	0	5	100
Total	3	4	63	88	6	8	72	100

same students as too low. For the college level courses in reading (Table 27) there were 54 responses out of 72 (75.0%) which indicated that the placement decisions were appropriate from both the student and instructor point of view. Four students rated their placement as appropriate and the instructors felt it was too high. Three students felt it too high and 6 too low although the instructor felt the placement appropriate, and only 5 students rated the class placement appropriate whereas the instructors rated it too low.

Mathematics. Opinions about mathematics placements are presented in Tables 28 and 29. Student and instructor opinion about placement in developmental mathematics courses show agreement in 145 out of 202 total cases (71.8%). Twenty-four students rated themselves as appropriately placed while their instructors reported

these placements too high; and 7 students felt their placement was too high and instructors also felt it was too high. Six students thought the developmental class was appropriate and 2 felt it too easy, while the instructors rated their placement as too low. Eleven students felt their placement was too high and 7 felt the math class was too low even though the instructors believed the developmental placement was appropriate.

For the college level math classes, 20 of 21 placements (95.2%) were seen as appropriate by both the student and instructor. One student felt the placement was too high while the instructor rated it appropriate.

In general, agreement existed for both the developmental courses and regular level college courses between both students and faculty as to the placement

Table 28

Student and Faculty Opinions of Student Placement in College Developmental Mathematics Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>						<u>Total</u>
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	
<hr/>							
Placement Too High	7	23	24	77	0	0	31 100
Placement Appropriate	11	7	145	89	7	4	163 100
Placement Too Low	0	0	6	75	2	25	8 100
Total	18	9	175	87	9	4	202 100

Table 29

Student and Faculty Opinions of Student Placement in
College Level Mathematics Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>							
	Too High		Appropriate		Too Low		Total	
	N	%	N	%	N	%	N	%
<hr/>								
Placement Too High	0	0	0	0	0	0	0	100
Placement Appropriate	1	5	20	95	0	0	21	100
Placement Too Low	0	0	0	0	0	0	0	100
Total	1	5	20	95	0	0	21	100

decisions that had been made. In developmental reading, writing, and mathematics combined (Table 30), the instructors only rated 20 students out of 350 as having been placed in too low a class (5.7%) and 37 out of 350 as being placed in too high a class (10.6%). Overall, the faculty said that 83.7% (293/350) of the placements were appropriate. Only 15 students from the three developmental areas felt their placement had been too low for their abilities and 28 rated themselves as placed in too high a class; 307 out of 350 or 87.7% judged their placement as appropriate.

From a total of 179 different students reporting from regular level college classes (Table 31), the instructors felt that only 4 students (2.2%) had been placed in too high a class and only 5 students (2.8%)

Table 30

Summary of Student and Faculty Opinions of Placement in College Developmental Courses

<u>Faculty Opinion</u>	Student Opinion						<u>Total</u>
	Too High N	High %	Appropriate N	Appropriate %	Too Low N	Low %	
Placement Too High	9	24	28	76	0	0	37 100
Placement Appropriate	19	6	263	90	11	4	293 100
Placement Too Low	0	0	16	80	4	20	20 100
Total	28	8	307	88	15	4	350 100

felt that they had been placed in too high a class.

Instructors rated the placements as appropriate 91.6% of the time (164/179) and students rated the placements appropriate 90.5% of the time (162/179).

On the basis of the large amount of agreement between instructors and their students in both college level and college developmental courses, it was concluded that the thresholds scores were acceptable to those affected most by the placement decisions. This was surprising since the statistical significance between placement test scores and subsequent grade distributions did not consistently support the concept of using tests for placement purposes.

Administrator/Faculty Survey

Administrators from all 28 Florida community colleges were asked to participate in the opinion survey relative

Table 31

Summary of Student and Faculty Opinions of Placement in College Level Courses

<u>Faculty Opinion</u>	<u>Student Opinion</u>							
	Too High		Appropriate		Too Low		Total	
	N	%	N	%	N	%	N	%
Placement Too High	0	0	4	100	0	0	4	100
Placement Appropriate	4	2	148	90	12	8	164	100
Placement Too Low	1	9	10	91	0	0	11	100
Total	5	2	162	91	12	7	179	100

to their placement procedures and administrators from 22 colleges responded. Administrators surveyed included the chief academic officer and directors or chairpersons of English, mathematics, reading, and college preparatory classes. Faculty surveyed included individuals who were teaching college preparatory and beginning college courses in reading, writing, and mathematics. Data were collected by use of an the Entry Level Placement Questionnaire (Appendix C). The questionnaire was completed by 278 faculty members, 28 persons with joint faculty and administrative responsibilities, and 57 other administrators for a total of 363 respondents.

For each group of respondents, the level of satisfaction with each of the four approved tests was calculated (see Table 32). The responses from separate

Table 32

Satisfaction with College's Present Placement Test by Position and Test

	Faculty Number	Admin. Number	Fac/Adm. Number	Total Number	%
SAT					
Very Satisfied	1	0	1	2	15.4
Satisfied	6	0	2	8	61.5
Dissatisfied	1	0	0	1	7.7
Very Dissatisfied	1	1	0	<u>2</u>	<u>15.4</u>
				13	100.0
ACT					
Very Satisfied	4	1	0	5	3.8
Satisfied	55	12	6	73	54.9
Dissatisfied	35	4	2	41	30.8
Very Dissatisfied	8	1	5	<u>14</u>	<u>10.5</u>
				133	100.0
ASSET					
Very Satisfied	1	1	0	2	3.8
Satisfied	11	8	0	19	36.5
Dissatisfied	14	6	2	22	42.3
Very Dissatisfied	8	1	0	<u>9</u>	<u>17.3</u>
				52	100.0
MAPS					
Very Satisfied	4	2	1	7	6.0
Satisfied	47	13	4	64	54.7
Dissatisfied	27	1	2	30	25.6
Very Dissatisfied	15	1	0	<u>16</u>	<u>13.7</u>
				117	100.0
Total					
Very Satisfied	10	4	2	16	5.1
Satisfied	119	33	12	164	52.1
Dissatisfied	77	11	6	94	29.8
Very Dissatisfied	32	4	5	<u>41</u>	<u>13.0</u>
				315	100.0

groups of faculty, faculty/administrators, and administrators were approximately equal to the responses from all groups combined. Percentages were thus calculated only for the combined response category.

It can be observed from Table 32 that 5.1% of all respondents were very satisfied, 52.1% satisfied, 29.8%

dissatisfied, and 13.0% very dissatisfied. This information is reported separately for each of the four approved tests. There was not a large percentage difference among the tests in the "very satisfied" or "very dissatisfied" category. In the "satisfied" category the SAT exam received the highest percentage with 61.5%, ACT received 54.9%, ASSET had 36.5%, and MAPS received 54.7%. The highest percentage of "dissatisfied" (42.3%) was with the ASSET.

The level of satisfaction of faculty and administrators by their specialty is presented in Table 33. Respondents with a speciality in reading were 9% very satisfied, 59% satisfied, 27% dissatisfied, and 5% very dissatisfied with the colleges' present placement test. The respondents with specialization in writing were 18% very satisfied, 43% satisfied, 25% dissatisfied, and 14% very dissatisfied. By individual exams, the SAT exam received the largest percentage of very satisfied responses from those in writing, with 2 of 4 or 50%. The ACT received 10 of 34 or 29% very satisfied, MAPS had 2 of 33 or 6% very satisfied, and no one rated ASSET in the very satisfied column. Seven percent of the faculty/administrators with a math speciality were very satisfied with the placement exams, 42% percent were satisfied, 37% dissatisfied, and only 14% were very

Table 33

Satisfaction with College's Present Placement Test by Speciality and Test

	Reading Number	Writing Number	Math Number	Devel. Number				
SAT								
Very Satisfied	0	2	0	0				
Satisfied	0	2	2	0				
Dissatisfied	0	0	1	0				
Very Dissatisfied	1	0	0	0				
ACT								
Very Satisfied	1	10	3	2				
Satisfied	7	17	21	7				
Dissatisfied	3	6	23	2				
Very Dissatisfied	0	1	7	0				
ASSET								
Very Satisfied	0	0	1	0				
Satisfied	3	2	4	0				
Dissatisfied	1	5	6	1				
Very Dissatisfied	1	1	2	2				
MAPS								
Very Satisfied	1	2	4	0				
Satisfied	3	13	17	4				
Dissatisfied	1	9	10	1				
Very Dissatisfied	0	9	5	0				
Total								
	Reading N	Writing %	Math N	Devel. %				
Very Satisfied	2	9	14	18	7	7	2	10
Satisfied	13	59	34	43	42	42	11	59
Dissatisfied	6	27	20	25	39	37	4	21
Very Dissatisfied	1	5	11	14	15	14	2	10
	22	100	79	100	105	100	19	100

dissatisfied. Those whose prime responsibility was developmental were 10% very satisfied, 59% satisfied, 21% dissatisfied, and 10% very dissatisfied.

Results of the opinions of the respondents concerning the appropriateness of the reading threshold score by position and by test are shown in Table 34. It can be observed that 60.0% believed the SAT was appropriate, 37.1% felt ACT appropriate, 18.8% thought ASSET was appropriate, and 33.7% deemed MAPS as appropriate. SAT and ACT had the largest percent who believed the threshold scores were "appropriate", while ASSET and MAPS received a larger percent of respondents that indicated the threshold scores were set too low. The data for the reading subtest scores for all respondents ($n=239$) had 36.6% indicating the threshold scores were too low, 34.5% indicating appropriate, and only 3.4% indicating the threshold scores were too high.

The opinions of respondents concerning the appropriateness of the writing threshold score by position and by test are shown in Table 35. Overall, 39.9% indicated the thresholds were too low and 2.5% indicated they were too high. SAT had the largest percentage of those who thought the threshold scores appropriate (60.0%), while ACT received 33.6%, MAPS 31.5%, and ASSET 25.0%.

As with the reading threshold score, the ASSET and MAPS were both rated as having too low a threshold by a majority of those responding from schools where ASSET and MAPS were used. Overall 39.9% of the writing specialists

Table 34

Appropriateness of Threshold in Reading by Position and Test

	Faculty Number	Admin. Number	Fac/Adm. Number	Total Number	%
SAT					
Too High	0	0	0	0	0.0
Too Low	2	0	0	2	20.0
Appropriate	3	1	2	6	60.0
Not Sure	2	0	0	<u>2</u>	<u>20.0</u>
				10	100.0
ACT					
Too High	4	1	0	5	4.8
Too Low	19	7	4	30	28.6
Appropriate	25	11	3	39	37.1
Not Sure	26	1	4	<u>31</u>	<u>29.5</u>
				105	100.0
ASSET					
Too High	3	0	0	3	9.4
Too Low	8	8	0	16	50.0
Appropriate	1	5	0	6	18.8
Not Sure	5	2	0	<u>7</u>	<u>21.9</u>
				32	100.0
MAPS					
Too High	1	0	0	0	1.1
Too Low	33	4	2	39	42.4
Appropriate	19	11	1	31	33.7
Not Sure	19	1	1	<u>21</u>	<u>22.8</u>
				92	100.0
Total					
Too High	8	1	0	9	3.4
Too Low	62	19	6	87	36.6
Appropriate	48	28	6	82	34.5
Not Sure	52	4	5	<u>61</u>	<u>25.6</u>
				239	100.0

felt the threshold scores too low and 32.5% felt the scores were appropriate. This disagreement was surprisingly high considering the agreement of instructors and students about the appropriateness of individual placements.

Table 35

Results of Faculty/Administrator Survey Concerning the Appropriateness of Threshold in Writing--by Position and by Test

	Faculty Number	Admin. Number	Fac/Adm. Number	Total Number	%
SAT					
Too High	0	0	0	0	0.0
Too Low	1	0	0	1	10.0
Appropriate	3	1	2	6	60.0
Not Sure	3	0	0	<u>3</u>	<u>30.0</u>
				10	100.0
ACT					
Too High	1	0	1	2	1.8
Too Low	22	9	6	37	33.6
Appropriate	29	8	0	37	33.6
Not Sure	26	4	4	<u>34</u>	<u>30.9</u>
				110	100.0
ASSET					
Too High	2	0	0	2	6.3
Too Low	7	7	0	14	43.8
Appropriate	4	4	0	8	25.0
Not Sure	4	4	0	<u>8</u>	<u>25.0</u>
				32	100.0
MAPS					
Too High	1	0	0	1	1.1
Too Low	34	9	3	46	50.0
Appropriate	22	6	1	29	31.5
Not Sure	15	1	0	<u>16</u>	<u>17.4</u>
				92	100.0
Total					
Too High	4	0	10	5	2.5
Too Low	64	25	9	99	39.9
Appropriate	58	19	3	80	32.5
Not Sure	48	9	4	<u>61</u>	<u>25.1</u>
				244	100.0

The opinions of respondents concerning the threshold score for the mathematics exam are shown in Table 36. Overall, 38.7% of the respondents indicated the threshold scores were too low, 3.8% indicated they were too high, 28.4% rated them appropriate, and 29.1% were not sure.

SAT again received the highest percent of "appropriate" responses at 66.6%, ACT received 30.2%, MAPS got 27.0%, and ASSET only received 12.1%. The threshold score was believed too low for ASSET by 57.6%, too low for MAPS by 39.0%, too low for ACT by 36.2%, and too low for SAT by only 8.3%.

When looking across specializations for individual trends (see Tables 34-36), it will be seen that the SAT threshold scores were considered too low by 20% of those in reading, 10% of those involved in writing, and 8.3% of those in mathematics. The ACT threshold score was rated too low by 28.6% of those in reading, 33.6% of those in writing, and 36.2% of the mathematics specialists. ASSET received a "too low" rating by 50.0% of those involved in reading, 43.8% in writing, and 57.6% of the mathematics respondents. The threshold score for MAPS received a "too low" rating by 42.4% of the reading respondents, 50.0% by the respondents in writing, and 39.0% from the mathematics respondents.

A summary of the perceived appropriateness of threshold scores for all tests combined is presented in Table 37. Thirty-eight percent of the administrators and faculty felt that the threshold scores were set too low and 26.6% were not sure. Only 31.7% rated the threshold scores as appropriate.

Table 36

Results of Faculty/Administrator Survey Concerning the Appropriateness of Threshold Scores in Mathematics--by Position and by Test

	Faculty Number	Admin. Number	Fac/Adm. Number	Total Number	%
SAT					
Too High	0	0	0	0	0.0
Too Low	1	0	0	1	8.3
Appropriate	5	1	2	8	66.6
Not Sure	3	0	0	<u>3</u>	<u>25.0</u>
				12	100.0
ACT					
Too High	6	0	0	6	5.2
Too Low	30	8	4	42	36.2
Appropriate	23	7	5	35	30.2
Not Sure	27	4	2	<u>33</u>	<u>28.4</u>
				116	100.0
ASSET					
Too High	3	0	0	3	9.1
Too Low	9	8	2	19	57.6
Appropriate	1	3	0	4	12.1
Not Sure	4	3	0	<u>7</u>	<u>21.2</u>
				33	100.0
MAPS					
Too High	1	0	0	1	1.0
Too Low	28	7	4	39	39.0
Appropriate	21	6	0	27	27.0
Not Sure	27	4	2	<u>33</u>	<u>33.0</u>
				100	100.0
Total					
Too High	10	0	0	10	3.8
Too Low	68	23	10	101	38.7
Appropriate	50	17	7	74	28.4
Not Sure	61	11	4	<u>76</u>	<u>29.1</u>
				261	100.0

Responses on appropriateness of the tests in use and suggested alternative placement tests are included in Tables 38 and 39. The total "yes" responses from all groups, meaning that they believed there was a more appropriate test for placement purposes, showed that 30.7%

Table 37

Summary of Faculty/Administrator Perceptions of Appropriateness of Threshold Scores in Reading, Writing, and Mathematics

	Reading	Writing	Math	Total	%
	N	N	N	N	
Too High	9	5	10	24	3.2
Too Low	87	98	101	286	38.4
Appropriate	82	80	74	236	31.7
Not Sure	61	61	76	198	26.6
	239	244	261	744	100.0

Table 38

Results of Faculty/Administrator Survey Concerning Whether there is a More Appropriate College Placement Test than the One Being Used--by Position and by Test Used

	Faculty		Admin.		Fac/Adm.		Total		Total	
	Yes	No	Yes	No	Yes	No	Yes	%	No	%
SAT	3	6	0	1	1	2	4	30.7%	9	69.3
ACT	45	43	8	12	8	5	61	50.4%	60	49.6
ASSET	16	12	7	7	1	1	24	54.5%	20	45.6
MAPS	26	46	5	12	1	5	32	33.7%	63	66.3
							121		152	

believed there was a better test than the SAT. ACT received 50.4% yes responses, ASSET received 54.5%, and MAPS was judged not the best by 33.7%. A total of all yes responses was 121 from 273 total responses for 44.3% overall believing that there was a more appropriate test available. SAT and MAPS received the largest number of respondents who did not believe there was a more appropriate test available (69.3% no and 66.3% no respectively).

Table 39

Results of Faculty/Administrator Survey Concerning a Suggested Alternative Placement Tests--by Position and by Test Used

Faculty Using	SAT	ACT	ASSET	MAPS	Total	N	%
SAT	1	6	0	7	14	16	
ACT	0	1	1	1	3	4	
ASSET	0	3	2	1	6	8	
MAPS	1	8	2	2	13	14	
Other	2	23	10	16	51	58	
					87	100	
Admin. Using	SAT	ACT	ASSET	MAPS	Total	N	%
SAT	0	0	0	0	0	0	0
ACT	0	0	2	0	2	11	
ASSET	0	1	0	0	1	5	
MAPS	0	3	0	0	3	16	
Other	0	3	6	4	13	68	
					19	100	
Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N	%
SAT	0	0	0	0	0	0	0
ACT	0	0	0	0	0	0	0
ASSET	0	0	0	0	0	0	0
MAPS	0	5	0	0	5	45	
Other	1	3	1	1	6	55	
					11	100	
Total Using	SAT	ACT	ASSET	MAPS	Total	N	%
SAT	1	6	0	7	14	12	
ACT	0	1	3	1	5	4	
ASSET	0	4	2	1	7	6	
MAPS	1	16	2	2	21	18	
Other	3	29	17	21	70	60	
					117	100	

Those who felt a better instrument might be available (Table 39) were asked for their opinion as to a suggested alternative placement test. Fifty-eight percent of the faculty responded that a test "other" than one of the four state approved tests would be best. Sixty-eight percent

of administrators and 55% of the faculty/administrator group also responded with the "other" category. Most responding with "other" noted that they preferred a locally developed test which included a sample of student writing. Overall, an average of 60% of the respondents felt that something other than one of the four tests currently being used would be more useful for placement decisions.

The opinions from respondents about the percentage of students placed in college developmental instruction in reading, writing, and mathematics, respectively, who should have been placed in college level instruction are presented in Tables 40, 41, and 42.

When faculty and administrator responses were totaled and averaged for those involved in reading classes, 39 of 156 responses or 25.0% estimated that 0% of the students were misplaced into developmental rather than regular college level classes (see Table 40). Thirty nine percent felt that the error rate was from 1% through 5%, 14.7% felt the error could be from 6% through 10%, 5.1% thought it could be from 11% through 15%, 2.6% felt the error to be 16-20%, and 13.5% thought that over 20% of the developmental students should have been placed in college level instruction.

Table 40

Results of Faculty/Administrator Survey concerning the
Percent of Students Placed in College Developmental
Reading Who Should have been Placed in College Level
Reading--as Reported by Position and by Test Used

Fac. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	2	13	0	9	24	
1 - 5%	0	11	6	19	36	
6 - 10%	1	6	0	9	16	
11 - 15%	0	3	2	2	7	
16 - 20%	1	0	0	1	2	
Over 20%	2	6	2	6	16	
					101	
Adm. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	6	1	2	9	
1 - 5%	0	8	5	8	21	
6 - 10%	0	3	3	1	7	
11 - 15%	0	0	0	1	1	
16 - 20%	0	2	0	0	2	
Over 20%	0	1	1	2	4	
					44	
Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N
0%	1	4	0	1	6	
1 - 5%	0	2	0	2	4	
6 - 10%	0	0	0	0	0	
11 - 15%	0	0	0	0	0	
16 - 20%	0	0	0	0	0	
Over 20%	0	1	0	0	1	
					11	
Total Using	SAT	ACT	ASSET	MAPS	Total	N %
0%	3	23	1	12	39	25.0
1 - 5%	0	21	11	29	61	39.1
6 - 10%	1	9	3	10	23	14.7
11 - 15%	0	3	2	3	8	5.1
16 - 20%	1	2	0	1	4	2.6
Over 20%	2	8	3	8	21	13.5
	7	66	20	63	156	100.0

Table 41

Results of Faculty/Administrator Survey Concerning the
Percent of Students Placed in College Developmental
Writing Who Should have been Placed in College Level
Writing--as Reported by Position and by Test Used

Fac. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	2	12	0	12	26	
1 - 5%	0	16	3	17	36	
6 - 10%	1	4	2	4	11	
11 - 15%	0	1	1	5	7	
16 - 20%	0	0	0	1	1	
Over 20%	2	6	3	5	<u>16</u>	97
Adm. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	6	1	2	29	
1 - 5%	0	6	6	8	27	
6 - 10%	0	5	1	1	10	
11 - 15%	0	0	1	2	5	
16 - 20%	0	1	0	1	5	
Over 20%	0	1	0	2	<u>4</u>	44
Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N
0%	1	4	0	1	6	
1 - 5%	0	3	0	1	4	
6 - 10%	0	0	0	0	0	
11 - 15%	0	0	0	0	0	
16 - 20%	0	0	0	0	0	
Over 20%	0	1	0	0	<u>1</u>	11
Total Using	SAT	ACT	ASSET	MAPS	Total	N %
0%	3	22	1	15	41	26.9
1 - 5%	0	25	9	26	60	39.5
6 - 10%	1	9	3	5	18	11.8
11 - 15%	0	1	2	7	10	6.6
16 - 20%	0	1	0	2	3	1.9
Over 20%	2	8	3	7	20	13.1
	6	66	18	62	152	100.0

Table 42

Results of Faculty/Administrator Survey Concerning the
Percent of Students Placed in College Developmental
Mathematics Who Should have been Placed in College
Level Mathematics--as Reported by Position and by Test Used

Fac. Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	1	15	4	13	33
1 - 5%	2	30	10	18	60
6 - 10%	1	9	3	7	20
11 - 15%	1	0	0	0	1
16 - 20%	0	2	0	2	4
Over 20%	2	7	1	9	19
					137

Adm. Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	7	2	3	12
1 - 5%	0	7	4	5	16
6 - 10%	0	2	2	1	5
11 - 15%	0	0	1	0	1
16 - 20%	0	1	0	0	1
Over 20%	0	1	0	2	3
					38

Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	4	0	4	8
1 - 5%	0	4	1	0	5
6 - 10%	0	1	0	0	1
11 - 15%	0	0	0	0	0
16 - 20%	0	0	0	0	0
Over 20%	0	0	0	0	0
					14

Total Using	SAT	ACT	ASSET	MAPS	Total
					N %
0%	1	26	6	20	53 28.0
1 - 5%	2	41	15	23	81 42.8
6 - 10%	1	12	5	8	26 13.7
11 - 15%	1	0	1	0	2 1.1
16 - 20%	0	3	0	2	5 2.6
Over 20%	2	8	1	11	22 11.6
	7	90	28	64	189 100.0

In the reading area, 23 of 66 respondents (35%) reported that there was no error in using the ACT exam. Of the SAT respondents 43% (3 of 7) said that the error rate was zero. ASSET received 11 of 20 total responses for 55% who felt there was a 1-5% placement error, and 29 of 63 or 46% felt there was 1-5% error with the MAPS exam.

A summary of faculty and administrators involved with the writing courses who reported that college developmental students should have been placed in college level writing classes can be seen in Table 41. It will be observed from this table that 26.9% (41 of 152) respondents thought there was 0% error, 39.5% reported 1-5%, 11.8% reported 6-10%, 6.6% thought it could be 11-15%, 1.9% reported 16-20%, and 13.1% reported over 20% error.

The same question was asked of faculty involved in mathematics, and 28.0% felt there was no error, 42.8% believed it was 1-5%, 13.7% marked 6-10%, 1.1% thought it could be 11-15%, 2.6% thought it would be 16-20%, and 11.6% felt it to be over 20% (see Table 42).

A summary total of the reading, writing, and mathematics faculty and administrators was very similar across specializations. An overall average of 26.7% believed there was no placement error, 40.6% rated it from 1-5%, 13.5% from 6-10%, 4.0% from 11-15%, 2.4% from 16-20%, and 12.7% believed it was over 20%. This information can be seen in Table 43.

Table 43

Summary Results of Total Judgment by Reading, Writing, and Mathematics Faculty and Administrators concerning the Percent of Students Placed in College Developmental Classes Who Should have been Placed in College Level Classes

From Table	40	41	42	Total	N	%
0%	39	41	53	133	26.7	
1 - 5%	61	60	81	202	40.6	
6 - 10%	23	18	26	67	13.5	
11 - 15%	8	10	2	20	4.0	
16 - 20%	4	3	5	12	2.4	
Over 20%	21	20	22	63	12.7	
	156	152	189	497	100.0	

The percentage of students placed in college level instruction who should have been placed in college developmental instruction is shown in Tables 44, 45, and 46. According to Table 44, 29.5% of the administrators and faculty believed that 1-5% of the students were placed in too difficult a class in reading. Another 29.5% felt the placement error was over 20%.

The responses for the writing faculty and administrators are shown in Table 45. Similar data resulted with 26.1% of the respondents believing 1-5% were incorrectly placed in college level classes and 29.4% believing over 20% were misassigned.

In the survey of administrators and faculty involved in mathematics (Table 46), 20.9% believed that 1-5% of the students were placed in too high a class and 37.1% believed that over 20% were misplaced in math.

The mean of the estimate by just the faculty group, excluding administrators and those with a dual role, as to the percentage of students placed in college level courses who should have been placed in college developmental courses was calculated. The mean percentage of faculty estimates of students placed "too high" was 8% in reading, 9% in writing, and 12% in mathematics. In other words, faculty estimated that 92% of the reading placements, 91% of writing, and 88% of mathematics placement decisions were appropriate.

A summary of the responses of reading, writing, and mathematics faculty and academic administrators was very similar across disciplines (Table 47) with an overall average of only 3.6% believing that there was no error in placing students in college level classes who should have been placed in college developmental classes. Over 25% percent believed the error to be from 1% through 5%, 19.5% believed it was 6-10%, 6.3% believed it 11-15%, and the largest group, 32.2%, believed it was over 20%.

Only 3.6% of the respondents believed the error rate to be zero in placing college level students in developmental classes, whereas 26.7% (Table 43) believed the error rate to be zero in placing developmental students in college level classes. A larger percentage (32.2%) estimated that over 20% error existed in placing

Table 44

Results of Faculty/Administrator Survey Concerning the
Percent of Students Placed in College Level Reading who
Should have been Placed in College Developmental Reading
--as Reported by Position and by Test Used

Fac.	Using	SAT	ACT	ASSET	MAPS	Total	N
	0%	0	1	1	2		4
1 -	5%	0	10	3	11	24	
6 -	10%	2	4	2	7	15	
11 -	15%	0	3	1	2	6	
16 -	20%	1	8	0	5	14	
Over	20%	4	14	3	16	37	
						100	

Adm.	Using	SAT	ACT	ASSET	MAPS	Total	N
	0%	0	0	4	0		4
1 -	5%	0	6	4	8	18	
6 -	10%	1	2	2	2	7	
11 -	15%	0	3	0	0	3	
16 -	20%	0	3	2	0	5	
Over	20%	0	2	2	2	6	
						43	

Fac/Adm	Using	SAT	ACT	ASSET	MAPS	Total	N
	0%	0	0	0	0		0
1 -	5%	1	1	0	2	4	
6 -	10%	0	4	0	0	4	
11 -	15%	0	1	0	0	1	
16 -	20%	0	1	0	0	1	
Over	20%	0	2	0	1	3	
						13	

Total	Using	SAT	ACT	ASSET	MAPS	Total	N	%
	0%	0	1	5	2	8	5.1	
1 -	5%	1	17	7	21	46	29.5	
6 -	10%	3	10	4	9	26	16.7	
11 -	15%	0	7	1	2	10	6.4	
16 -	20%	1	12	2	5	20	12.8	
Over	20%	4	18	5	19	46	29.5	
		9	65	24	58	156	100.0	

Table 45

Results of Faculty/Administrator Survey Concerning the
Percent of Students Placed in College Level Writing
Instruction who Should have been Placed in College
Developmental Writing--as Reported by Position and by
Test

Fac. Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	0	0	2	2
1 - 5%	0	13	4	16	33
6 - 10%	1	14	4	5	24
11 - 15%	0	3	1	4	8
16 - 20%	1	6	1	8	16
Over 20%	4	13	1	20	38
					121

Adm. Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	1	0	0	1
1 - 5%	0	3	4	6	13
6 - 10%	1	10	2	2	15
11 - 15%	0	2	1	0	3
16 - 20%	0	2	1	1	4
Over 20%	0	2	2	5	9
					45

Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	1	0	0	0	1
1 - 5%	0	0	0	1	1
6 - 10%	0	3	0	0	3
11 - 15%	0	2	0	0	2
16 - 20%	0	1	0	0	1
Over 20%	1	3	0	2	5
					14

Total Using	SAT	ACT	ASSET	MAPS	Total
					N %
0%	1	1	0	2	4 2.2
1 - 5%	0	16	8	23	47 26.1
6 - 10%	2	27	6	7	42 23.3
11 - 15%	0	7	2	4	13 7.2
16 - 20%	1	9	2	9	21 11.7
Over 20%	5	18	3	27	53 29.4
	9	78	21	72	180 100.0

Table 46

Results of Faculty/Administrator Survey Concerning the
Percent of Students Placed in College Level Mathematics
who Should have been Placed in College Developmental
Math--as Reported by Position and by Test

Fac. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	2	0	3	5	
1 - 5%	0	12	3	8	23	
6 - 10%	2	17	0	6	25	
11 - 15%	0	3	3	2	8	
16 - 20%	2	9	1	5	17	
Over 20%	3	19	10	23	55	
					133	
Adm. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	0	0	1	1	
1 - 5%	0	7	3	3	13	
6 - 10%	0	1	4	3	8	
11 - 15%	0	1	0	1	2	
16 - 20%	1	4	1	0	6	
Over 20%	0	5	1	4	10	
					40	
Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	0	0	1	1	
1 - 5%	0	2	0	1	3	
6 - 10%	0	1	0	0	1	
11 - 15%	0	0	0	0	0	
16 - 20%	0	3	0	1	4	
Over 20%	0	2	2	0	4	
					13	
Total Using	SAT	ACT	ASSET	MAPS	Total	N %
0%	0	2	0	5	7	3.8
1 - 5%	0	21	6	12	39	20.9
6 - 10%	2	19	4	9	34	18.3
11 - 15%	0	4	3	3	10	5.4
16 - 20%	3	16	2	6	27	14.5
Over 20%	3	26	13	27	69	37.1
	8	88	28	62	186	100.0

Table 47

Summary Results of Total Judgment by Reading, Writing,
and Mathematics Faculty and Administrators Concerning
the Percent of Students Placed in College Level Classes
who Should have been Placed in Developmental Level
Classes

From Table	44	45	46	Total	
				N	%
0%	8	4	7	19	3.6
1 - 5%	46	47	39	132	25.3
6 - 10%	26	42	34	102	19.5
11 - 15%	10	13	10	33	6.3
16 - 20%	20	21	27	68	13.0
Over 20%	46	53	69	168	32.2
	156	180	186	522	100.0

students in college level classes who should have been in developmental classes, although only 12.7% believed the reverse, that over 20% error was made in placing developmental students in college level courses.

The estimated percentage of students moved from college developmental instruction to college level instruction after initial placement is shown in Tables 48, 49, and 50. Faculty only responses were not sought at the suggestion of the Academic Deans Council, as they were not in a position to estimate accurately the number of students moved. Fifty-nine percent of the reading administrators indicated that 1-5% of the students were moved from college developmental to college level reading classes after initial placement. Fifty-five percent of those involved in writing and 56% of those involved in mathematics believed likewise that 1-5% of the students

Table 48

Results of Faculty/Administrator Survey Concerning the
Percent of Students Moved from College Developmental
Reading to College Level Reading after Initial Placement
--as Reported by Position and by Test Used

Adm. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	1	0	3		4
1 - 5%	0	4	1	6	11	
6 - 10%	0	1	1	0	2	
11 - 15%	0	1	0	0	1	
16 - 20%	0	1	0	0	1	
Over 20%	0	1	0	1	2	

Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	0	0	0		0
1 - 5%	1	0	0	2	3	
6 - 10%	0	0	0	0	0	
11 - 15%	0	0	0	0	0	
16 - 20%	0	0	0	0	0	
Over 20%	0	0	0	0	0	

Total Using	SAT	ACT	ASSET	MAPS	Total	N	%
0%	0	1	0	3		4	17
1 - 5%	1	4	1	8	14	59	
6 - 10%	0	1	1	0	2	8	
11 - 15%	0	1	0	0	1	4	
16 - 20%	0	1	0	0	1	4	
Over 20%	0	1	0	1	2	8	
					24	100	

were moved up into college level courses after initial college developmental placement. A summary by class type of those moved into college level courses is contained in Table 51. The largest group, 56%, felt that from 1% through 5% of the students were moved after initial placement.

Table 49

Results of Faculty/Administrator Survey Concerning the
Percent of Students Moved from College Developmental
Writing to College Level Writing after Initial Placement
--as Reported by Position and by Test Used

Adm. Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	2	0	3	5
1 - 5%	0	4	1	6	11
6 - 10%	0	1	1	0	2
11 - 15%	0	1	0	0	1
16 - 20%	0	1	0	0	1
Over 20%	0	1	0	1	2

Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	0	0	0	0
1 - 5%	1	0	0	1	2
6 - 10%	0	0	0	0	0
11 - 15%	0	0	0	0	0
16 - 20%	0	0	0	0	0
Over 20%	0	0	0	0	0

Total Using	SAT	ACT	ASSET	MAPS	Total
					N %
0%	0	2	0	3	5 21
1 - 5%	1	4	1	7	13 55
6 - 10%	0	1	1	0	2 8
11 - 15%	0	1	0	0	1 4
16 - 20%	0	1	0	0	1 4
Over 20%	0	1	0	1	2 8
					24 100

The percentage of students moved from college level instruction to college developmental instruction after initial placement is shown in tables 52, 53, and 54. Again, faculty only responses were not sought at the suggestion of the Academic Deans Council, as they were not in a position to estimate accurately the

Table 50

Results of Faculty/Administrator Survey Concerning the Percent of Students Moved from College Developmental Mathematics to College Level Mathematics after Initial Placement--as Reported by Position and by Test Used

Adm. Using	SAT	ACT	ASSET	MAPS	Total
0%	0	3	0	2	5
1 - 5%	0	3	1	4	8
6 - 10%	0	1	1	0	2
11 - 15%	0	1	0	1	2
16 - 20%	0	0	0	0	0
Over 20%	0	0	0	1	1

Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total
0%	0	0	0	0	0
1 - 5%	0	2	1	2	5
6 - 10%	0	0	0	0	0
11 - 15%	0	0	0	0	0
16 - 20%	0	0	0	0	0
Over 20%	0	0	0	0	0

Total Using	SAT	ACT	ASSET	MAPS	Total
					N %
0%	0	3	0	2	5 22
1 - 5%	0	5	2	6	13 56
6 - 10%	0	1	1	0	2 9
11 - 15%	0	1	0	1	2 9
16 - 20%	0	0	0	0	0 0
Over 20%	0	0	0	1	1 4
					23 100

Table 51

Summary Results of Faculty/Administrator Survey Concerning the Percent of Students Moved from College Developmental Classes to College Level Courses after Initial Placement

Total	Reading	Writing	Math	Total	
				N	%
0%	4	5	5	14	20
1 - 5%	14	13	13	40	56
6 - 10%	2	2	2	6	8
11 - 15%	1	2	2	4	6
16 - 20%	1	1	0	2	3
Over 20%	2	2	1	5	7
	24	24	23	71	100

Table 52

Results of Faculty/Administrator Survey Concerning the Percent of Students Moved from College Level Reading to College Developmental Reading after Initial Placement--as Reported by Position and by Test Used

Adm. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	3	0	3		6
1 - 5%	0	5	1	6		12
6 - 10%	0	0	1	0		1
11 - 15%	0	0	0	0		0
16 - 20%	0	1	0	0		1
Over 20%	0	0	1	1		2

Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	0	0	0		0
1 - 5%	1	0	0	2		3
6 - 10%	0	0	0	0		0
11 - 15%	0	0	0	0		0
16 - 20%	0	0	0	0		0
Over 20%	0	0	0	0		0

Total Using	SAT	ACT	ASSET	MAPS	Total	N	%
0%	0	3	0	3		6	24
1 - 5%	1	5	1	8		15	60
6 - 10%	0	0	1	0		1	4
11 - 15%	0	0	0	0		0	0
16 - 20%	0	1	0	0		1	4
Over 20%	0	0	1	1		2	8

number of students moved. Of those administrators involved in reading, 60% felt the change rate was 1-5%. Fifty-nine percent of the writing and 61% of the mathematics administrators also felt the 1-5% change rate was customary.

Table 53

Results of Faculty/Administrator Survey Concerning the
Percent of Students Moved from College Level Writing to
College Developmental Writing after Initial Placement--
as Reported by Position and by Test Used

Adm. Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	3	0	3		6
1 - 5%	0	4	1	6	11	
6 - 10%	0	1	0	0	1	
11 - 15%	0	0	0	0	0	
16 - 20%	0	1	0	0	1	
Over 20%	0	0	1	1	2	
Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total	N
0%	0	0	0	0		0
1 - 5%	1	0	0	2	3	
6 - 10%	0	0	0	0	0	
11 - 15%	0	0	0	0	0	
16 - 20%	0	0	0	0	0	
Over 20%	0	0	0	0	0	
Total Using	SAT	ACT	ASSET	MAPS	Total	N %
0%	0	3	0	3	6	25
1 - 5%	1	4	1	8	14	59
6 - 10%	0	1	0	0	1	4
11 - 15%	0	0	0	0	0	0
16 - 20%	0	1	0	0	1	4
Over 20%	0	0	1	1	2	8
					24	100

As with the 56% estimated percentage moved from developmental to college level courses, an overall majority (60%) of those responding to the reverse question (see summary shown in Table 55) believed that from 1% through 5% of students had to be reassigned from college level to college developmental classes after their initial placement.

Table 54

Results of Faculty/Administrator Survey Concerning the Percent of Students Moved from College Level Mathematics to College Developmental Mathematics after Initial Placement--as Reported by Position and by Test Used

Adm. Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	2	0	1	3
1 - 5%	0	4	1	5	10
6 - 10%	0	1	0	1	2
11 - 15%	0	0	0	0	0
16 - 20%	0	0	0	0	0
Over 20%	0	1	1	1	3
Fac/Adm Using	SAT	ACT	ASSET	MAPS	Total
					N
0%	0	0	0	0	0
1 - 5%	0	1	2	2	5
6 - 10%	0	1	0	0	1
11 - 15%	0	0	0	0	0
16 - 20%	0	0	0	0	0
Over 20%	0	0	0	0	0
Total Using	SAT	ACT	ASSET	MAPS	Total
					%
0%	0	2	0	1	3 13
1 - 5%	0	5	3	7	15 61
6 - 10%	0	2	0	1	3 13
11 - 15%	0	0	0	0	0 0
16 - 20%	0	0	0	0	0 0
Over 20%	0	1	1	1	3 13
					24 100

The opinion of respondents concerning the relative seriousness of placing a student in college level instruction who should have been placed in college developmental instruction and placing a student in college developmental instruction who should have been placed in college level instruction is shown in Table 56. Eighty-seven percent of the faculty, 85% of administrators, and

Table 55

Summary Results of Faculty/Administrator Survey
Concerning the Percent of Students Moved from College
Level Classes to College Developmental Courses After
Initial Placement

	Total	Reading	Writing	Math	Total	
					N	\$
0%	6	6	3	15	15	20
1 - 5%	15	14	15	44	44	60
6 - 10%	1	1	3	5	5	7
11 - 15%	0	0	0	0	0	0
16 - 20%	1	1	0	2	2	3
Over 20%	2	2	3	7	7	10
	25	24	24	73	73	100

Table 56

Results of Faculty/Administrator Survey Concerning Which
Mistake in the Placement of Students is Most Serious

Mistake	Faculty		Admin.		Fac/Adm. Total	
	N	%	N	%	N	%
Placing Student in College Level who Should be in Developmental	203	87	45	85	20	90
Placing Students in College Developmental Instruction Who Should Be in College Level	26	13	8	15	2	10
Total	229	100	53	100	22	100
					308	100

90% of faculty/administrators (overall average of 88%) reported that placing a student in too difficult a course when they should have been in developmental courses would be the more serious of the two errors that incorrect test

Table 57

Results of Telephone Survey Concerning the
Perceptions of Academic Officers on the Impact of
State Mandated Entry Level Testing and Placement

Compared to No Testing and Placement Program			
<u>Variable</u>	<u>Increased</u>	<u>Same</u>	<u>Decreased</u>
Instructional Rigor	12	5	0
Student Achievement	12	5	0
Student Retention	15	1	3*
Course Content	10	8	0

Compared to Institutional Testing and Placement Program			
<u>Variable</u>	<u>Increased</u>	<u>Same</u>	<u>Decreased</u>
Instructional Rigor	1	14	0
Student Achievement	6	11	0
Student Retention	0	10	5
Course Content	0	17	0

*Increased drop-out of students required to enroll in college preparatory instruction.

placement could create. Only 12% overall felt that placing a college level student in a developmental class was the more serious mistake.

Table 57 contains the results of a state-wide telephone survey of academic officers on the impact of state mandated entry level testing and placement compared against no college testing and placement and compared against an institutionally devised testing and placement

program. Those responding generally agreed that a testing program increases instructional rigor, student achievement, student retention, and course content as compared to no testing. There was little perceived difference, however, between the state mandated program and institutionally established programs.

Results Relative to Research Question Three

Factors that Enhance Validity

Factors from the literature that enhance validity of placement decisions were summarized. This summary is presented under 4 categories and is followed by a survey of placement considerations from the faculty/administrator survey.

Grades. Previous student grades were often reported in the literature section as probably being the best single predictor of future college success, and they were often considered more reliable than standardized tests. Several writers have recommended using high school grades in conjunction with standardized tests to achieve the maximum success in predicting future college grades. Convincing arguments have been made for the use of measures other than grades which have often been criticized as lacking objectivity and standardization. While grades and test scores may correlate highly with one another, researchers have had difficulty demonstrating

that they are related to any other behaviors other than doing well on aptitude tests.

Grades were almost universally used as a criterion because they are a commonly developed index and are usually available. The relationship between test scores and grades are most meaningful when considered for each individual course. When data are combined precision is usually lost. The interpretation of grades earned in more advanced classes by community college students could also vary considerably from those grades earned in lower level courses, as an A grade in a advanced level class may represent either more or less rigor than an A grade in the lower level course.

Many instructors grade on the curve, and a classroom of lower ability students may still have the same proportion of higher grades. If developmental students are separated out of a class then the remaining students may have a more difficult time achieveing high grades. The pace of a class is usually set by the mean ability of the students, however, and teachers receive feedback from students as to the level of difficulty. Often if a course is deemed too hard, the basic content is not changed but the instructor may change the pace, cover less material, and still assign grades according to a normal curve.

Other measures reported in the literature. Various other measures of performance and combinations thereof were reported in the literature review which were used in

the assessment of student performance. Oral exams, performance tests, situational tests, observations, and checklists have been suggested as evaluation alternatives. The personal characteristics of self-confidence and motivation, creativity, persistence, values, attitudes, and manual and artistic skills might also have relevance to the degree of success a student might expect in college. Many of the same criticisms applied to grades, however, apply to the alternative forms of assessment.

Placement tests. It is widely advocated in the literature to use standardized tests for placement (usually in combination with previous grade analysis), and the principal advantage is that students can be compared against a common standard. When high school grade averages are compared it is necessary to consider the differences among schools and their grading practices and the differences from teacher to teacher and from year to year. Many community college students do not enter school directly from high school and their intervening experiences may affect their knowledge. Some students may not have even graduated from high school.

No evidence was found in the literature to suggest that tests were directly related to traditional academic goals such as making students more thoughtful, articulate, humane, or better people in their social and occupational lives. Yet test scores carry enormous symbolic value. Some confer high or low status on institutions and

professions based on scores. As testing becomes more emphasized in education, its impact may have the student "tested from cradle to grave, sorted and sifted into and out of curricula, denied access and opportunities, and have his or her talent thwarted on the basis of test scores" (Kifer, 1985, p. 36). A student can be recruited, admitted, assigned to classes, placed in a major, and followed throughout college through the use of assessment service information and little else. No one knows the impact such a scenario will have on the student, and few educators seem to be asking such questions.

Individual college norms. To establish the most effective placement procedures, it is recommended in the literature that a college should develop its own norms. National norms might provide information about the general quality of enrolled students, but they do not reflect the characteristics of a specific institution accurately enough to be of maximum help in the placement of students. Once the most accurate test is identified and the threshold scores determined, college administrators might wish to include high school grades as a second independent variable to help validate the placement decision initially based on test scores.

Factors from Administrator/Faculty Survey

Faculty and administrator opinions of using test scores is a factor that will determine how much effort

they will expend to find alternative methods of student placement that will enhance the overall success rate. Faculty and administrators were asked whether or not they felt there was a more appropriate test for placement purposes than those currently being used in Florida (see Table 38). In descending order, 54.5% felt there was a more appropriate test than ASSET, 50.4% thought something was better than ACT, 33.7% thought something was better than MAPS, and 30.7% of those surveyed thought there would be a better test than SAT.

Those who reported there might be a better instrument were asked to suggest an alternative (see Table 39), and 70 of 117 respondents or 60% marked the "other" category and reported that they preferred a locally developed test which included a sample of student writing. Faculty and administrators also reported that the threshold scores were usually set too low. The SAT threshold score was considered too low by 20.0% of those in reading, 10.0% of those involved in writing, and 8.3% of those in mathematics (see Tables 34-36). The ACT threshold was rated too low by 28.6% of the reading, 33.6% of the writing, and 36.2% of the mathematics respondents. The ASSET threshold received a too low rating from 50.0% of those involved in reading, 43.8% in writing, and 57.6% of the mathematics respondents. The MAPS threshold was considered too low by 42.4% of the reading respondents,

50.0% of those in writing, and 39.0% of the mathematics respondents.

Overall, 12.7% of the administrators and faculty felt that there was over 20% error in placing students in developmental classes who should have been placed in college level classes (see Table 43). Thirty-two percent reported that the error in placement was over 20% in placing students in regular college level classes who should have been placed in developmental classes (see Table 47).

On the other hand, 52.1% of those answering the administrators survey said they were "satisfied" with the college's present placement test (see Table 32). Of the students questioned, 87.7% responded that their placement was appropriate in developmental classes and 90.5% believed their placement appropriate in college level classes (see Tables 30 and 31). Since testing is generally accepted as having face value in our society, the placement decisions based on such test scores did not appear to be seriously questioned either by students whose lives were most affected or by administrators.

CHAPTER V
SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

The following questions were addressed by this study:

1. Are the ACT, ASSET, MAPS, and MAPS tests valid for community college use in entry level placement?
2. What are the opinions of students, academic administrators, and college faculty concerning the threshold scores for placement decisions?
3. What are the major factors that are perceived by faculty and administrators and reported in the literature that can enhance the accuracy of placement decisions?

A data base was formed by matching social security numbers and test scores of all Florida students who took one or more of the state approved tests in the fall term, 1986 with subsequent grades received and student social security numbers. The grade tapes were obtained from 7 Florida community colleges and contained grades from the fall 1986 and winter 1987 terms.

Perceptions were also obtained through a survey administered to developmental level and college level classes containing a total of 1495 individual students and their instructors from 7 community colleges. Academic administrators and faculty were also surveyed to

obtain their perceptions of policies on entry level placement. Respondents from 22 Florida colleges participated and 363 survey responses were analyzed.

Research Question One

Are the ACT, ASSET, MAPS, and SAT tests valid for community college use? While sometimes a statistically significant and generally expected relationship existed between student grades and placement test scores, specific tests and specific individuals often defied expectations. The highest percentage of A grades was generally associated with the highest test score groups, and the highest percentage of F grades was generally associated with lower test score groups for all four state approved placement tests. However, students with low test scores often earned high grades, and students with high test scores often earned low grades. It was further noted that moving the threshold score up could decrease the number of students who fail regular college level classes, but it would greatly increase the number of students who would be forced into developmental classes who could otherwise pass college level courses.

A major evidence of the need to improve the validity of placement tests was determined from the analysis wherein many grade distributions failed to be significantly different between high score groups and low score groups in both regular college and developmental

courses for a given test. Although the distributions of grades for high score groups and low score groups were more frequently significant for college level courses, the percentage of A and B grades in the low score group was often too high to justify raising the threshold scores. This combined with individual cases where low scoring students actually received better grades than high scoring students is an indication that placement decisions based only on exam scores is not a completely valid means for making such decisions. The answer to question one was that the relationships between test scores from state approved placement tests and subsequent grades were not valid in all instances and therefore exam scores should not be used as the sole placement criteria.

It was suggested in the literature that tests designed for admission purposes would not discriminate accurately at the course placement level. Criteria in addition to test scores were suggested. Such criteria included high school grades, previous courses, and student interest and motivation.

It was also of interest to determine which one of the state approved tests had the least placement error. Comparing percentages of students that were most likely placed too high or too low failed to show that any one test was obviously better than any other test. However, subtests of the ACT were best for placing students in

reading, ACT and SAT were equal in writing courses, and the MAPS exam was best for placing students in mathematics.

Research Question Two

Student/Instructor Survey

What are the opinions of students concerning the threshold scores for placement decisions? Most students (73%) believed that mistaken placements, either too high or too low, were equally serious. Of those selecting a more serious mistake, however, a majority (19.7% to 7.2%) agreed with the faculty and academic administrators that placing a student too high was a more serious mistake than placing a student too low.

Overall, 91.6% of the instructors of students in college level courses, and 90.5% of the students in those same courses rated their placement as appropriate. In college level reading classes the students and instructors were in agreement 75% of the time, 86% in writing courses, and 95.2% in mathematics classes.

In developmental classes the instructors rated 83.7% of the overall placement decisions as correct and the students rated the decisions 87.7% correct. Students and instructors agreed 72.2% of the time in reading placement, 95.6% of the time in writing placement, and 71.8% of the time in mathematics placement. A great deal of agreement exists in both the developmental courses and in college

level courses between students and faculty as to the appropriateness of placement decisions. In college developmental courses combined, the instructors only rated 5.7% of the students as having been placed too low and 10.6% were rated as having been placed too high. Instructors of college level courses only rated 2.2% of the students as having been placed too high and only 2.8% of the students rated themselves as having been placed too high.

Administrator/Faculty Survey

What are the opinions of academic administrators and college faculty concerning the threshold scores for placement decisions? When asked about the appropriateness of the threshold scores presently used by their institutions, the most prevalent response by administrators was that the scores were set "too low." For the reading subtest, 36.6% reported that the threshold score was too low. This ranged from the SAT where 20.0% felt the scores were too low to the ASSET where 50% felt the scores were too low. For the writing subtest, 39.9% felt the threshold scores were too low ranging from the SAT (10.0% too low) to the MAPS (50.0% too low). For the mathematics subtest 38.7% thought the threshold scores were too low, ranging from the SAT (8.3% too low) to the ASSET (57.6% too low). The opinion that the threshold was set too low was compounded by the opinion from 88% of the

administrators surveyed that placing a student in too high a class (in college level courses) was a more serious mistake than placing a student in too low a college class.

Although there were some reservations about how low the threshold scores were set, the presently approved tests and threshold scores for placement into college level or college developmental courses were generally satisfactory to both college faculty and administrators. This satisfaction was probably related to the flexible procedures in Florida that allowed other factors to be considered before placement, rather than to the precision of the approved tests in making placement decisions.

Academic officers reported in a telephone survey that they felt that mandated testing and placement programs increased instructional rigor, student achievement, student persistence in college level courses, and course content. There was little perceived difference, however, between the state mandated program and institutionally established programs.

Research Question Three

What are the major factors that are perceived by faculty and administrators and reported in the literature that can enhance the accuracy of placement decisions? Faculty and administrator respondents generally agreed that better methods of evaluation should be considered and that higher test threshold scores should be required.

With the exception of the ASSET test, however, a majority of the respondents were satisfied with their college's present testing system. The overall figure of 29.8% who were dissatisfied may be due to preference for another state approved test. Specifically asked to name a more appropriate test, respondents usually named either one of the other approved tests or a locally developed test that included a writing sample.

Previous student grades were often reported in the literature as probably being the best single predictor of future college success, and they were often considered more reliable than standardized tests. Several writers have recommended using high school grades in conjunction with standardized tests to achieve the maximum success in predicting future college grades.

Arguments have been made for the use of measures other than grades, which have often been criticized as lacking objectivity and standardization. While grades and test scores may correlate highly with one another, researchers have had difficulty demonstrating that they are related to any other behaviors other than doing well on aptitude tests.

Various other measures of performance and combinations thereof have been reported in the literature in the assessment of student performance. Oral exams, performance tests, situational tests, observations, and checklists have been suggested as evaluation alternatives.

The personal characteristics of self-confidence and motivation, creativity, persistence, values, attitudes, and manual and artistic skills might also have relevance to the degree of success a student might expect in college. Many of the same criticisms applied to grades, however, apply to the alternative forms of assessment.

Implications and Recommendations

No direct evidence was found in the literature to indicate that tests were related to traditional academic goals such as making students more thoughtful, articulate, humane, or better people in their social and occupational lives. Yet test scores carry enormous symbolic value.

The high esteem that respondents generally gave to placement test scores, and their perceptions that raising threshold scores would somehow improve the placement process, was an indication that there is widespread ignorance of the limitations that even most commercial test vendors have printed in user manuals. It also indicates that respondents are unaware of the large body of literature that suggests limitations on the use of single test scores for decisions affecting individuals. Of greater concern is the possible acceptance by students that their test score is evidence of their worth and ability. Subsequently students may become discouraged and lower their personal life goals to match the perceptions fostered by test score results.

It is suggested by the results of comparing student grades and test scores that better tests for placement in college classes be sought or developed, and the position of several writers who have opposed the use of standardized tests as the sole means of evaluation is supported. It is recommended that educational leaders in Florida not discontinue the state mandated placement procedure at this time, but that they encourage the enhancement of placement accuracy by using all available information. It is further recommended that community college leaders be especially carefully not to become bureaucratic in the application of test score results and retain flexibility and instructor discretion in the final student placement decision. The use of flexible course credit in combined courses of college level and college developmental students should be explored. In such a system students may receive college or developmental credit based on performance standards met in class.

APPENDIX A
ENTRY LEVEL PLACEMENT QUESTIONNAIRE FOR
COMMUNITY COLLEGE STUDENTS

Course No. _____

Please express your opinion about the appropriateness of your placement in classes at your college. Your opinion and those of your fellow students at other Florida community colleges will be tabulated and reported as an evaluation of the state mandated placement procedures. No specific information about your responses will be reported.

Name _____ S.S. No. _____

Circle the response opinion that best expresses your opinions.

1. Your current age is _____
2. You are 1. male 2. female
3. You are 1. Asian 2. Black 3. Caucasian
4. Hispanic 5. American Indian
4. How many terms have you been in college (including this term)?
1. 1 term 2. 2 terms 3. 3 terms 4. 4 terms
5. more than 4 terms
5. Have you completed college preparatory (developmental) courses in
a. math 1. yes 2. no
b. writing 1. yes 2. no
c. reading 1. yes 2. no
7. How many courses are you enrolled in this semester?
1. 1 2. 2 3. 3 4. 4 or more
8. Which of the following best expresses your feelings about the level of difficulty of this course?
1. too difficult 2. about right 3. too easy
9. Were you required to take further diagnostic tests after you took the entry test?
1. yes 2. no

10. You are currently taking this course because of:
 1. assignment from entry test scores
 2. successfully completing a lower level course
 3. changed from a lower level course into this course
 4. changed from a higher level course into this course

11. When were you assigned to this course?
 1. prior to the beginning of the semester
 2. after the semester began

12. Which of the following errors would you consider to be the most serious?
 1. Placing a student into college level instruction when they really belong in a college preparatory course.
 2. Placing a student into a college preparatory course when they really belong in a college level course
 3. Both misplacements are equally serious

13. Which of the following do you feel should be the basis of assigning students to either college preparatory courses or college level courses?
 1. high school courses and grades
 2. entry level testing
 3. diagnostic tests

14. Your High School grade point average (GPA) was _____

15. Your objective for attending this college is:
 1. an AA (transfer) degree
 2. an AS degree
 3. a Vocational Certificate
 4. other (specify)

APPENDIX B
STATE ENTRY LEVEL PLACEMENT STUDY
INSTRUCTIONS FOR TEACHERS

At the beginning of the semester you agreed to assist us in a study of entry-level placement. We are now requesting your help in completing this research.

Attached you will find a copy of the roster of the class you were asked to assess. Please base your assessment of each student's placement level on ability to do the level of work required in the course.

Use quizzes, homework, classwork, discussions and other feedback from the student. Placement criteria such as placement test scores must not be considered in the assessment.

Use the following scale to facilitate the recording of each assessment

(1) = The student should have been placed in a lower level course.

(2) = The student was placed appropriately.

(3) = The student should have been placed in a higher level course.

Also enclosed is a questionnaire to be completed by each student in the class. Please distribute them to your students and allow sufficient time, about 10 minutes, for their completion. Please provide prompting as appropriate, but discourage students from communicating with each other during the response period.

We would like both you and your students to be assured that your responses will be tabulated along with responses from other classes and other colleges and be used only in statistical analysis. No responses will be linked to any individual.

After you have completed your assessment and you have collected the questionnaires from the students, please return them at your earliest convenience. Thank you for your assistance.

APPENDIX C
ENTRY LEVEL PLACEMENT QUESTIONNAIRE FOR
COMMUNITY COLLEGE ADMINISTRATORS AND FACULTY

Please express your opinion about college level placement in your college. Your opinion and those of your colleagues in other Florida community colleges will be tabulated and reported as an evaluation of the state mandated placement procedure effective Fall term, 1985 (SBE Rule 64-10.315).

Circle the response option that best expresses your opinions.

1. Your position is
 1. Faculty
 2. Admn.
 3. Both Faculty & Admn.
2. Your discipline speciality is
 1. Reading
 2. Writing
 3. Mathematics
 4. Admn.
 5. Developmental
 6. Other, specify _____
3. How satisfied are you with your college's present placement test?
 1. Very Satisfied
 2. Satisfied
 3. Dissatisfied
 4. Very Dissatisfied
4. Which state approved test is used for placement in your college?
 1. SAT
 2. ACT
 3. ASSET
 4. MAPS
5. Do you feel there is a more appropriate test for this purpose?
 1. Yes
 2. No.
6. If yes, which of the following:
 1. SAT
 2. ACT
 3. ASSET
 4. MAPS
 5. Other, specify _____
7. The present score used to place students at your college
 - 7a. in reading is
 1. too high
 2. too low
 3. appropriate
 4. not sure
 - 7b. in writing is
 1. too high
 2. too low
 3. appropriate
 4. not sure
 - 7c. in math is
 1. too high
 2. too low
 3. appropriate
 4. not sure

8. Your estimate of the percent of students initially placed in college preparatory at your college who should be in college level instruction

8a. in reading is ____%
8b. in writing is ____%
8c. in math is ____%

9. Your estimate of the percent of students initially placed in college level instruction at your college who should be in college preparatory

9a. in reading is ____%
9b. in writing is ____%
9c. in math is ____%

10. Your estimate of the percent of students at your college moved from college preparatory to college level after initial placement and subsequent assessment

10a. in reading is ____%
10b. in writing is ____%
10c. in math is ____%

11. Your estimate of the percent of students at your college moved from college level to college preparatory after initial placement and subsequent assessment

11a. in reading is ____%
11b. in writing is ____%
11c. in math is ____%

12. Which of the following mistakes is more serious?

1. Placing a student in college level instruction who should be in college preparatory instruction.
2. Placing a student in college preparatory instruction who should be in college level instruction.

13. Are you involved in the college's process for evaluating the appropriateness of each student's placement.

1. Yes 2. No

14. Use the back of this form or an attached letter to make additional comments concerning the testing and placement procedures mandated by the State.

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BIOGRAPHICAL SKETCH

Victor Kenneth Isbell was born October 14, 1947, in Richfield, Utah. After graduating from Richfield High School in 1965 he attended Brigham Young University (BYU) in Provo, Utah. He served as a voluntary, non-paid religious missionary in Uruguay, South America, from 1967 through 1969. He graduated from BYU in 1970 with a Bachelor of Science degree in psychology and graduated from BYU in 1972 with a Master of Business Administration (MBA) degree.

Since 1972 he has been teaching management and marketing classes at Southern Utah State College in Cedar City, Utah, where he is an associate professor. In 1982 he was responsible for operating the federal Small Business Development Center at the college and in 1983 he spent a year on sabbatical at the University of Florida. While completing doctoral courses he worked as a research assistant for the Florida Community Junior College Inter-Institutional Research Council in the College of Education at the University of Florida. He also taught marketing and computer classes for Santa Fe Community College and for NOVA University.

Mr. Isbell is the father of six children; is owner and operator of several small business ventures; is a

certified emergency medical technician (EMT); and is active in many community, church, and professional organizations.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

John M. Nickens
John M. Nickens, Chair
Professor, Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

James L. Wattenbarger
James L. Wattenbarger
Professor, Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Woodroe M. Parker
Woodroe Max Parker
Professor, Counselor Education

This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December, 1988

David E. Smith (RE)
Dean, College of Education

Madelyn Backhart
Dean, Graduate School